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Federal and State Rural Lands, 1950

with Special Reference to Grazing

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UNITED STATES DEPARTMENT OF AGRICULTURE
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CONTENTS

FEDERAL RURAL LAND	Page
Introduction.....	1
Ownership of Federal land.....	1
Sources of ownership.....	3
Administering agencies.....	5
Geographic distribution of Federal holdings.....	13
Land ownership pattern.....	14
Vegetative cover.....	17
Major land uses.....	18
Multiple-use management.....	18
Primary and secondary uses.....	19
Agricultural uses of Federal land.....	21
Farming.....	22
Grazing.....	22
Relative importance of Federal range lands.....	23
Leases and permits to use Federal land.....	29
Land-use control.....	35
Grazing fees and rentals on Federal land.....	37
Trend in grazing capacity of Federal range land.....	38
Possibilities for improving Federal range land.....	40
Soil and water conservation needs.....	42
Costs and benefits of range improvements.....	43
STATE-OWNED LAND	
Introduction.....	45
Amount and major sources of State land holdings.....	46
Purposes of State ownership.....	46
Primary uses of State-owned land.....	47
Forestry.....	47
Park and recreational uses.....	50
Fish and game reserves.....	51
Institutional uses.....	52
Miscellaneous special uses.....	53
Agricultural uses.....	53
Relative importance of State-owned range land.....	55
Opportunities for improving State-owned land.....	57
Ownership pattern a barrier to improvement.....	58
Lack of authority to improve.....	58
Land-management practices.....	61
Selective sales and preference leases.....	61
Group-tenure arrangements.....	63
SUMMARY.....	66
LITERATURE CITED.....	70
APPENDIX.....	72

PREFACE

Approximately 60 percent of the land area of the continental United States is in farms. The nature and extent of the ownership and the uses of the land in farms are regularly reported in the Census of Agriculture and in various statistical series of the United States Department of Agriculture. No systematic arrangement has yet been made for similar reporting on the 40 percent of the land area not in farms.

Roughly 10 percent of the land in farms and 60 percent of the rural land not in farms in continental United States are in public ownership. Publicly owned land in farms consists largely of Federal and State land leased to farmers and ranchers, and Indian land farmed by Indians or leased to non-Indians under guardianship of the Federal Government. Publicly owned rural land not in farms is used primarily for forests, parks, defense establishments, fish and game reserves, flood-control and power developments, protection of soils and watersheds, water supplies, public roads, and various other public purposes. Most of this land is administered under the principle of multiple use and much of it is made available to farmers and ranchers for supplementary agricultural uses under leases and grazing permits or by deference to trespass.

The purpose of the study upon which this report is based was to present an inventory of the uses of rural land in Federal and State ownership in continental United States, and to appraise present and potential contributions of this land to agricultural production.

Although privately owned land not in farms and land owned or administered by counties and other units of local government were not included in the study, it is believed that this inventory accounts for most of the agricultural uses of land in continental United States not reported in the Census of Agriculture. In a subsequent report, the Bureau of Agricultural Economics expects to combine data presented here with agricultural census and other statistics in an over-all inventory of major land uses.

It was first contemplated that this inventory would include all rural land in public ownership. Efforts to obtain data on land owned by counties and other units of local government were abandoned, however, when it became apparent that State agencies and secondary sources could not supply the needed information. An inventory of county land would have meant contacting one or more officers in most of the 3,069 counties in the United States, and extensive travel for follow-up work in each State. Much additional work would have been needed to check on the rural land held by municipalities for parks, recreational areas, water supplies, sewage disposal, airports, and other purposes.

This report is confined throughout to the continental United States.

Statistical data were supplied by 22 Federal agencies and approximately 250 State agencies. Statistics were compiled by Ruth Irvin. Information concerning land management was provided by agencies that have responsibility for large acreages used for farming and grazing. Helpful suggestions and comments were received from representatives of several of the Federal land-managing agencies, particularly Russell S. Keifer and Irving Senzel, Bureau of Land Management, W. R. Chapline, Forest Service, and Edward G. Grest, Soil Conservation Service. The study was directed by H. H. Wooten, Bureau of Agricultural Economics, and special acknowledgment is made of his numerous contributions to the study.

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By R. D. DAVIDSON, *agricultural economist*
Bureau of Agricultural Economics

FEDERAL RURAL LAND

INTRODUCTION

During the growth and development of the United States, the Federal Government acquired title to unoccupied or public-domain lands which included three-fourths of the land area within the present continental boundaries. Although most of the original public domain in continental United States has passed into private ownership through sales and agricultural entries, grants to States, railroad grants, and various other disposals, many large areas and numerous scattered remnants are still owned by the Federal Government. A considerable acreage of rural land has been reacquired by the Federal Government from private owners for forests, parks, fish and game preserves, military sites, flood-control and power developments, land reclamation, and many other purposes. In all, 22 Federal agencies now have rural holdings which, currently or potentially, are farming and grazing land.

OWNERSHIP OF FEDERAL LAND

In 1950, rural land in Federal ownership amounted to 455.6 million acres. This is 23.9 percent of the land area in continental United States.

Total acreage in Federal ownership was slightly less in 1950 than in 1945, but it was somewhat greater than in 1940. The totals were 448.8 million acres in 1940 and 457.6 million acres in 1945, compared with 455.6 million acres in 1950 (table 1). The increase from 1940 to 1945 was 1.9 percent, and the decline from 1945 to 1950 was 0.4 percent. The 1950 total was 1.5 percent above 1940.

Even though these changes in Federal land holdings were relatively small, some marked changes occurred in the control of Federal rural land by the various Federal agencies in both periods. Major changes from 1940 to 1945 included: "The disposal of more than 2 million acres by the General Land Office and the Farm Security Administration; the purchase of more than 7 million acres of private land by the War and Navy Departments; the utilization by the War and Navy Departments of large areas

previously administered by other Federal agencies; the consummation by the Forest Service of purchases initiated before the War; and the exchange of national forest land and timber for State and private land situated within national forests." (15, p. 13).¹ A net of 8.8 million acres of rural land moved from private uses, largely agricultural, into public

TABLE 1.—*Rural land-holdings in Federal ownership, by primary administering agencies, continental United States, 1940, 1945, and 1950*¹

Agency	Area of public domain and acquired land		
	1940 ²	1945 ²	1950
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Bureau of Land Management.....	193,468,050	180,353,766	179,093,483
Forest Service.....	154,694,995	157,880,231	³ 160,582,176
Bureau of Indian Affairs.....	54,839,278	56,576,626	57,279,729
National Park Service.....	13,239,264	13,602,189	13,955,638
Bureau of Reclamation.....	14,475,000	9,882,404	9,927,560
Soil Conservation Service.....	7,231,767	7,476,304	7,415,084
Fish and Wildlife Service.....	4,544,000	4,656,881	⁴ 4,128,784
Farmers Home Administration.....	1,078,724	541,685	14,189
War Department.....	3,847,004	23,435,343	19,332,451
Navy Department.....	499,961	1,707,595	2,126,004
Agricultural Research Administration.....	⁵ 132,585	132,585	166,083
Tennessee Valley Authority.....	578,579	1,124,977	⁶ 458,631
Other agencies.....	⁵ 220,214	220,214	⁷ 1,152,361
Total.....	448,849,421	457,590,800	455,632,173

¹ Many reservations and withdrawals overlap and large acreages of Federal land are jointly administered and have multiple uses. In this tabulation effort has been made to eliminate the overlaps and all acreages are reported under the one agency considered to have primary jurisdiction. Consequently, the totals listed in this table are not necessarily the same as lands administered by the agency for a particular function or use.

² As reported by L. A. REUSS and O. O. McCracken (15), unless otherwise indicated.

³ Includes land in process of acquisition on June 30, 1949, under the assumption that such acquisitions were largely completed by January 1950.

⁴ Does not include Desert Game project, which is under joint administration and was reported by Bureau of Land Management.

⁵ As of 1945. Data were not readily available for 1940.

⁶ Does not include 577,000 acres in stream channels and impoundments reported as land area in 1945.

⁷ Includes rural land held by War Assets Administration, Farm Credit Administration, Atomic Energy Commission, Federal Security Administration, Bureau of Prisons, Department of Commerce, Coast Guard, Bonneville Power Commission, Bureau of Mines, and the Veterans Administration. The land reported by War Assets Administration and Farm Credit Administration was surplus military holdings, remnants of which were later transferred to General Services Administration.

uses, primarily military. In addition, 28.3 million acres of public land were transferred to the War Department, and 9.0 million acres were leased from private owners for military uses during the War emergency (15, p. 72).

¹ Italic numbers in parentheses refer to Literature Cited, p. 70.

From 1945 to 1950, several Federal agencies reported substantial changes in their holdings of rural land. However, as was true in earlier periods, most of the changes reflected interagency transfers rather than changes in the total acreage in Federal ownership. Six agencies reported total reductions of 7,146,334 acres in their holdings; six others and the miscellaneous group reported total increases of 5,187,707 acres. There were a number of transfers and, in some instances, the same land was transferred two or more times. There were also a number of exchanges or partially compensating transfers. A few changes occurred in reporting agencies for land under joint administration, due possibly to transfers of primary jurisdiction.

In the aggregate, transfers, exchanges, purchases, and sales of Federal rural land involved 8 to 10 million acres. But the net change in total holdings of rural land was a decline of 1,958,627 acres, including a reduction of 577,000 acres of stream channels and impoundments reported in 1945 as land area administered by the Tennessee Valley Authority. The net reduction in Federal holdings of rural land during the period was 1,381,627 acres.

Most of the decline in Federal holdings of rural land from 1945 to 1950 reflected disposals of farm land. The Farmers Home Administration disposed of 527,496 acres in completing the liquidation of rural resettlement land, practically all of which was farm land. In addition, the Farm Credit Administration as a designated disposal agency handled sales of 759,269 acres of surplus rural military holdings, most of which was farm land. The Bureau of Land Management disposed of some public-domain land and the Bureau of Reclamation and the Soil Conservation Service of some irrigated land. These disposals were partially offset, however, by purchases of farm land by the Corps of Army Engineers for flood-control purposes and by other agencies for forest, park, recreational, game preserve, and other uses. Nevertheless, it appears that the net decline in Federal holdings of rural land during this period reflects approximately a net transfer of land from public use or control into private ownership, mainly for agricultural use.

SOURCES OF OWNERSHIP

Almost nine-tenths of the Federal rural lands are reservations and remnants of the original public domain. Land held in 1950 included 407.4 million acres that had never been in private ownership. The remaining 48.2 million acres were acquired land (table 2).

In the series of international agreements and treaties which established the boundaries of the continental United States, the Federal Government acquired title to all the land outside the original 13 States and Texas. The total area of the public-domain States was 1,442.3 million acres. Titles to 42.8 million acres of this land were granted or confirmed to satisfy State and private claims based on grants of foreign governments before acquisition by the United States. Of the remaining 1,399.5 million acres, 991.9 million acres were disposed of by homesteading, sales, grants, and other methods. Major disposals are shown in the tabulation on page 5.

Around three-fifths of the remaining public-domain land has been reserved for special public uses. Reservations of public domain for all purposes total 237.6 million acres. The remainder—170.0 million acres—

is vacant, unreserved, and unappropriated land. This is land that has not been sought for private ownership. Land in this category is now available for private ownership, however, only in the event that specific

TABLE 2.—*Area of public domain and acquired land, by administering agencies, 1950*

Agency	Public domain	Acquired land	Total
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Bureau of Land Management.....	178,843,674	¹ 249,809	179,093,483
Forest Service.....	138,999,592	² 21,582,584	160,582,176
Bureau of Indian Affairs.....	55,608,363	³ 1,671,366	57,279,729
National Park Service.....	⁴ 11,908,241	2,047,397	13,955,638
Bureau of Reclamation.....	9,284,007	643,553	9,927,560
Soil Conservation Service.....	⁵ 400,737	7,014,347	7,415,084
Fish and Wildlife Service.....	1,666,303	2,462,481	4,128,784
Farmers Home Administration.....	.....	14,189	14,189
War Department.....	⁴ 9,700,187	⁶ 9,632,264	19,332,451
Navy Department.....	⁴ 840,026	1,285,978	2,126,004
Agricultural Research Administration.....	132,554	33,529	166,083
Tennessee Valley Authority.....	⁷ 1,308	457,323	458,631
Other agencies.....	70,211	⁸ 1,082,150	1,152,361
Total.....	407,455,203	48,176,970	455,632,173

¹ Exchange land, acquired by Resettlement Administration and successor agencies in connection with the submarginal land-retirement program.

² Includes land in process of acquisition as of June 30, 1949.

³ As reported for June 30, 1945. Some land has been bought since that time.

⁴ June 30, 1949, as reported by Bureau of Land Management (*20, tables 9 and 13*).

⁵ Includes exchange land transferred by Bureau of Land Management.

⁶ Includes 2,482,593 acres of civil land.

⁷ As reported in connection with original acquisition. May be included in land subsequently classified as stream channels and impoundments, or water area, and excluded from reported acreage.

⁸ Includes War Assets Administration, Farm Credit Administration, Atomic Energy Commission, Federal Security Administration, Bonneville Power Administration, Bureau of Mines, Veterans Administration, and the Departments of Justice, Commerce, State, and Treasury.

appraisal shows it is capable of supporting independent farm and ranch operations or other private enterprise.²

The 48.2 million acres of acquired land are held for special uses, or to prevent uses detrimental to the general welfare. Some extensive areas have been bought for military and flood-control purposes, and to establish national forests, parks, and other special-use areas. However, the major purchases have been made to block in administrative units of reserved

² For most purposes, withdrawal for classification is equivalent to reservation. The land cannot be acquired until it has been classified by the Bureau of Land Management as suitable for acquisition, pursuant to the laws under which the applicant intends to acquire it. All applicants must submit a statement that they have inspected the land applied for and are personally familiar with its characteristics. Thus, the withdrawal is a generalized reservation, subject to tract-by-tract review by individual applicants and Government appraisers.

public domain, chiefly as a way to prevent conflicting or detrimental uses. Nearly a fourth of the acquired land was bought in connection with the submarginal-land retirement programs.

Disposition of public-domain land in the
continental United States, June 30, 1949

<i>Item</i>	<i>Area Acres</i>
Disposals:	
Granted or sold to homesteaders ¹	285,384,633
Granted to railroad corporations ²	91,624,685
Granted to veterans as military bounties ³	61,000,000
Confirmed as private land claims ⁴	34,604,828
Sold under timber and stone laws.....	13,857,306
Granted or sold under timber culture laws.....	10,866,888
Sold under desert land laws.....	10,002,277
Granted to States.....	223,839,534
State reservations ⁵	8,200,000
Public sales and other disposals ⁶	295,432,166
Total disposals.....	1,034,812,317
Present public domain ⁷	407,455,203
Area of original public domain ⁸	1,442,267,520

¹ Includes homesteads on ceded Indian land.

² Excludes revested land in Oregon and California.

³ Report of the Director of the Bureau of Land Management, (20), 1946, p. 62.

Possibly an estimate.

⁴ Grants made by foreign governments prior to the acquisition of the public domain by the United States.

⁵ Includes 3.8 million acres reserved for Connecticut in Ohio, and 4.4 million acres reserved for Virginia—4.2 million acres in Ohio and 0.2 million acres in Indiana.

⁶ Includes public, private and pre-emption sales, mineral entries, script locations, sales of town lots and town sites, etc. This is a residual item, as some of the statistics were incomplete.

⁷ As tabulated in table 2. May include some acquired and exchange land that has been in private ownership.

⁸ Land area of the public-domain States, as reported in the 1940 Census. The reported land area of the other States was 463,094,400 acres, making a total of 1,905,361,920 acres in the continental United States.

Compiled from Report of Director of Bureau of Land Management, 1949, (20).

ADMINISTERING AGENCIES

Around 95 percent of federally owned rural land is administered by agencies in the Departments of Interior and Agriculture. In 1950, seven agencies in the Department of the Interior administered 264.4 million acres of rural land, and five agencies in the Department of Agriculture administered 168.4 million acres. The National Defense Department administered 21.4 million acres of rural land, or 4.7 percent of the total. The remaining 1.4 million acres of rural land, or 0.03 percent of the total, were administered by eight agencies, the largest holders being the Atomic Energy Commission and the Tennessee Valley Authority. Rural land holdings of the various agencies are shown by States in table 17.

Distribution of Federal rural land among administering agencies indicates to some extent both the purposes of Federal ownership and the character and use capabilities of the land. This is particularly true with reference to holdings of the Bureau of Land Management and the Forest Service, which together comprise three-fourths of the Federal rural land. The Forest Service administers 35.2 percent and the Bureau of Land Management 39.3 percent of the rural land in Federal ownership in the continental United States.

FOREST SERVICE.—National forests were established primarily for production of timber and protection of watersheds. In the Western States, which contain nearly seven-eighths of the national forest land, most national-forest land is located on mountain slopes and plateaus where moisture is sufficient for tree growth (fig. 1). However, the national-forest areas of the West extend into the drier, brush-covered foothills and other areas where conservation of water supplies is essential. It has been estimated that these mountains and foothills embrace the headwaters which furnish about 85 percent of the flow of major western rivers and streams used for irrigation, for water power, and for domestic purposes (24, p. 1).

National forests and experimental areas include 139.0 million acres of reserved public domain and 21.6 million acres of acquired land in the continental United States. Public domain land consists mainly of original woodland which, because of roughness, stoniness, poor soils, aridity, inaccessibility, or other unfavorable characteristics, was not developed for other uses. The acquired land is also mostly timberland but includes some depleted or low-grade land that has been farmed at one time or another. Most of this acquired land has material watershed significance. Some large areas of eastern mountains have been bought under the Weeks Act primarily because of their importance for watershed-management and flood control. Forest Service holdings also include 318,355 acres in experimental forests and ranges outside national forests.

The Secretary of Agriculture has authority to permit, regulate, or prohibit grazing in the national forests. Under his direction, the Forest Service allows the use of national forest ranges for grazing purposes, properly coordinated with other uses such as timber production, watershed protection, recreation, and wildlife.

Approximately 80 million acres of national forest land are classified as usable for grazing. In 1949, more than 90 percent of the usable grazing area was grazed. The remainder was closed to grazing for various specific reasons, such as watershed protection, recreation, protection of wildlife, production of timber, and range and timber reseedling.

BUREAU OF LAND MANAGEMENT.—The land holdings of the Bureau of Land Management include 170.0 million acres of vacant, unreserved, and unappropriated public domain and 9.1 million acres of reserved land in continental United States. This land consists largely of arid and semi-arid plains, minor interspersed mountains and valleys and desert areas. Virtually none of it is suitable for dry-land farming. Extensive areas of forest and woodland are scattered among the Bureau's holdings but commercial timber is limited largely to revested railroad grant land in Oregon.³ The greatest commercial value of the land administered by the

³ Scattered through the Taylor Grazing Districts and elsewhere on land administered by the Bureau are extensive areas of forest and woodland. The acreages of these forest and woodland areas have not been exactly determined. The best available estimates show 6,473,000 acres of commercial timber types and 32,110,000 acres of woodland types. Acreage of commercial timber includes the revested Oregon and California railroad grant lands which are some of the most productive forest lands in Federal ownership.

In 1949, the Bureau collected 37.1 million dollars in revenues from the land it administers. Of this amount, \$31.0 million were from mineral leases, \$3.9 million were from timber sales, \$1.2 million were from farming and grazing leases and permits, and the remainder was from sales of land and miscellaneous other sources.

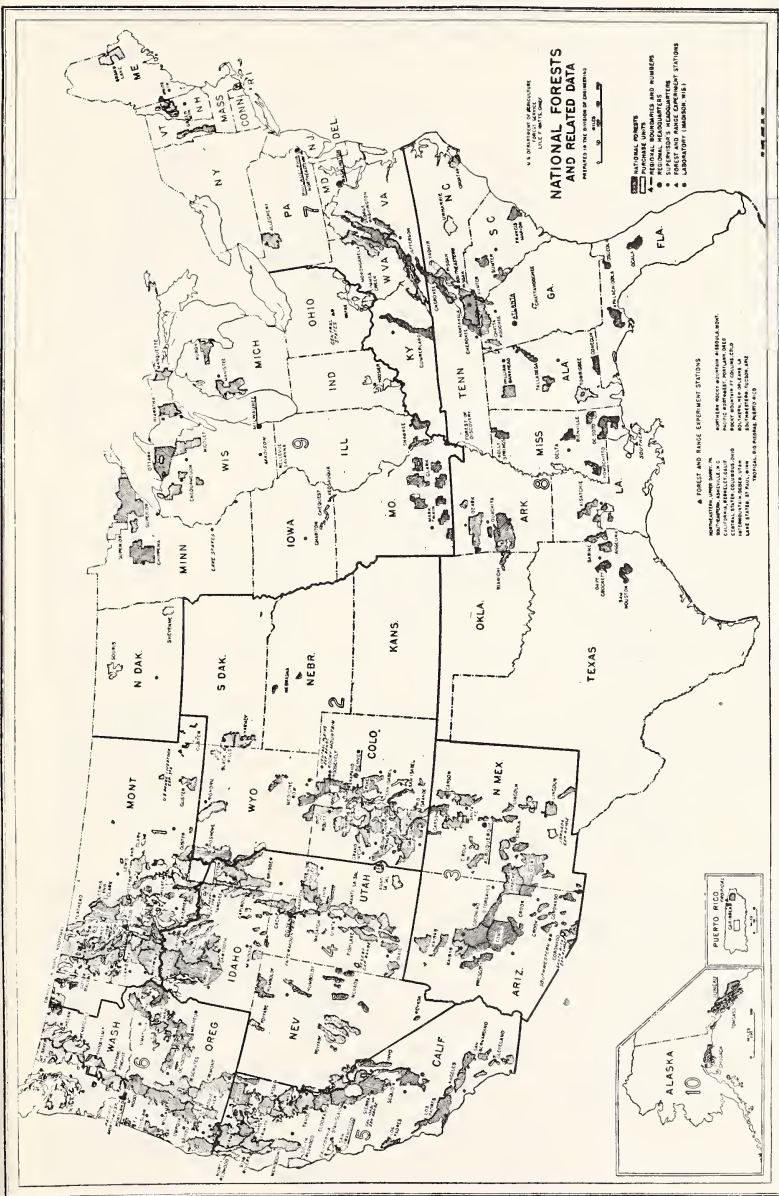


FIGURE 1.—In 1949, the Forest Service had primary jurisdiction over, or custody of, 160.6 million acres of land in 244 national forests and related areas. Around 85 percent of this land was located in the 11 Western States. Roughly half of the total acreage was classified as usable for grazing. Around 90 percent of the usable grazing land was grazed in 1949. The remaining 10 percent was temporarily closed to grazing for such reasons as timber production, forest and range reseeding, watershed protection, recreation, and protection of wildlife.

Bureau is for mineral production. Nevertheless, most of the Bureau's holdings are suitable for administration in grazing districts, or they can be leased out for seasonal grazing. In 1949, about 134 million acres of this land were administered in Taylor Grazing Districts ⁴ and more than 12 million additional acres outside grazing districts were leased for grazing (fig. 2). Virtually none of the land now administered by the Bureau of Land Management is capable of supporting independent farm and ranch operations, because of the limited and seasonal nature of the grazing.

NATIONAL PARK SERVICE.—Land administered by the National Park Service, which is held in Federal ownership to preserve scenic and historic values, includes 11.9 million acres reserved from the public domain and 2.0 million acres of acquired land in the continental United States. The public domain consists chiefly of rugged mountains, deserts, and other land that has little value except for scenic and recreational uses. However, it includes some virgin forests and some land that is valuable for watershed protection, power development, wildlife, and the grazing of domestic livestock. The acquired park land, which includes historic sites and scenic areas bought to block in the reservations of public domain, necessarily includes some tracts that are suitable for forestry, grazing, and farming uses. However, preservation of scenic and historic values largely precludes use of national park land for agricultural and forestry production.

BUREAU OF RECLAMATION.—Land administered by the Bureau of Reclamation includes 9.3 million acres of reserved public domain and 0.6 million acres of acquired land in the continental United States. Under the reclamation laws, public-domain land may be withdrawn from entry if it is needed or is susceptible of irrigation in connection with contemplated irrigation developments. But if field investigations show that the contemplated development of irrigation is not feasible, the reclamation withdrawal is vacated and the land is restored to public domain. Moreover, public-domain and acquired land within Federal reclamation projects are subject to entry under the homestead laws when construction is completed and water is available. Thus, the land holdings of the Bureau of Reclamation are limited largely to reserved public-domain land in proposed Federal project areas not yet appraised with reference to feasibility, and to public-domain and acquired land in projects that are in process of development and disposition. The only land held permanently is that used for irrigation facilities, such as dams, reservoirs, and canals.

The Bureau of Reclamation arranges for active management of much of its land under cooperative agreement with other agencies. Of the 9.9 million acres held in 1950, 5.8 million acres were managed under cooperative arrangements. The Bureau of Land Management handled grazing leases on Reclamation land in grazing districts and other areas that contained large holdings of public domain. An arrangement with the Forest Service provided full forest and watershed management of timber and range land at Reclamation reservoirs within national forest boundaries. Under another arrangement, the National Park Service assisted in the planning, development, and administration of recreational facilities at reservoir sites; it was assigned primary jurisdiction at Coulee Dam,

⁴ Districts organized under provisions of the Taylor Grazing Act, approved June 28, 1934 (28), and administered by the Bureau of Land Management. The Bureau also administers 36 million acres outside the Taylor Grazing Districts.

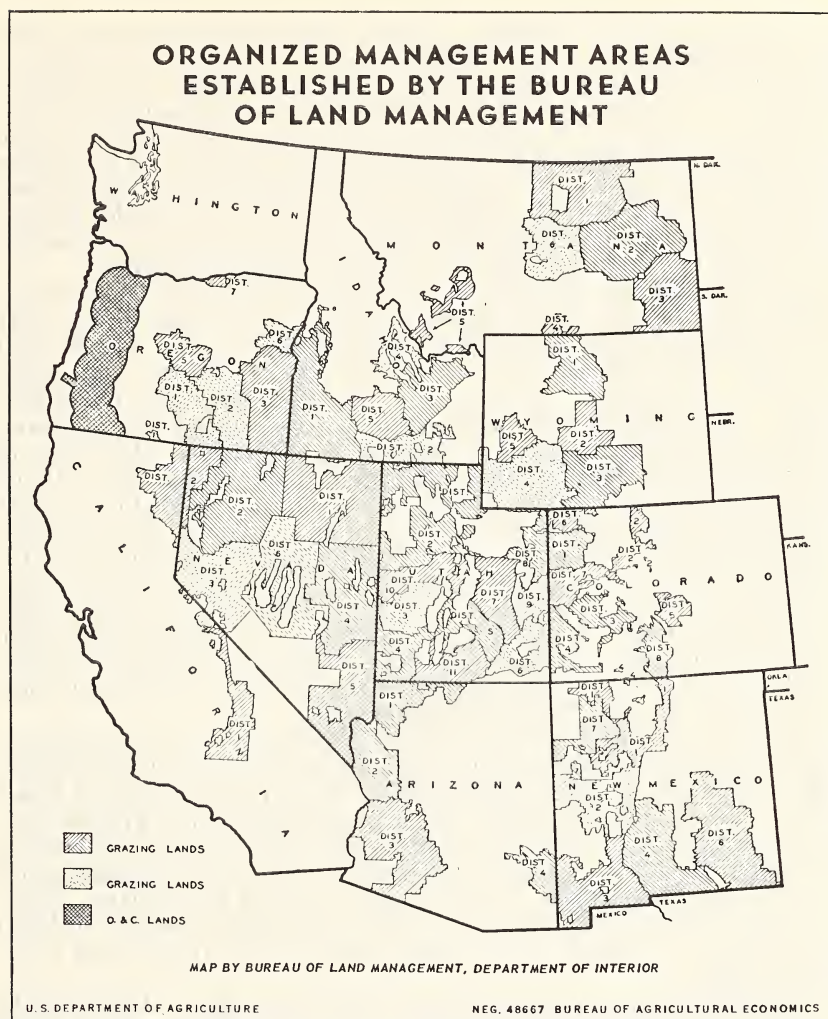


FIGURE 2.—In 1950, the Bureau of Land Management was the managing agent for 187.8 million acres of land in continental United States, including the revested O & C timber lands in Oregon. It had primary jurisdiction over 179.6 million acres and managed the remainder under cooperative agreements. The area within Taylor Grazing Districts in 1949 included approximately 134 million acres of unreserved public land, 13 million acres of reserved public land, and 1.5 million acres of non-Federal land administered by agreement and through Pierce Act leases. Unreserved public-domain land outside Taylor Grazing Districts totaled more than 36 million acres, of which 12.5 million acres were leased for grazing under Section 15 of the Taylor Grazing Act. Of the 179.6 million acres under exclusive jurisdiction of the Bureau, 157.3 million acres were used for grazing.

Lake Mead, and Millerton Lake. Similarly, when the reservoir areas are within national wildlife reserves, the Fish and Wildlife Service administers the fish and game uses and incidental recreational facilities. At the remaining reservoirs, State and local governmental agencies are encouraged to develop and manage public park and recreational areas.

FISH AND WILDLIFE SERVICE.—Federal land administered by the Fish and Wildlife Service of the Department of the Interior, is managed as part of a Nation-wide system of fish and game refuges. In 1950, 4.1 million acres of Federal land were under exclusive jurisdiction of that Service. In addition, 3.7 million acres were under joint administration, 1.2 million acres were under secondary administration, and 0.3 million acres were managed under cooperative arrangements with State agencies. Roughly one-fifth of the 9.4 million acres of Federal land under fish and game management in continental United States was devoted exclusively to propagation and conservation of fish and wildlife resources.

For the most part, fish and game reserves are located on land that has little value for agricultural purposes. Many of the larger reserves are in or adjacent to inaccessible and wasteland areas, such as marshes and swamps, desert plains, and rugged mountains. However, land under exclusive jurisdiction of the Service includes 2.5 million acres of acquired land. This includes some timberland, particularly adjoining streams and artificial lakes, and limited acreages of farm land. More than 75 percent of the Nation's wildlife is produced on agricultural land. Under the impetus of high agricultural prices, farmers have tended to intensify their uses of farm lands and to clear and drain or otherwise remove former wildlife habitats. In order partially to compensate for this trend, the Fish and Wildlife Service has acquired some land in good farming areas. It also has encouraged the States to use the Federal aids provided under the Pittman-Robertson Act for the acquisition of additional land whenever suitable land can be secured at reasonable prices. Many State fish and game areas are managed as part of the Nation-wide system, in close cooperation with the Fish and Wildlife Service.

BUREAU OF INDIAN AFFAIRS.—In 1950, 57.3 million acres in continental United States were under the jurisdiction of the Bureau of Indian Affairs. However, about 17 million acres of this total was trust-allotted land, which is owned by individual Indians under guardianship of the Federal Government. An additional 39 million acres were owned collectively by Indian tribes. The remaining 1.3 million acres were federally owned land reserved specifically for the benefit or use of the Indians. Thus, although it is administered by the United States and is usually included in statistics of Federal land, in the ordinary sense Indian land is not public land.

Agriculture is the primary use for most Indian land. However, the bulk of the Indian holdings is in some 260 reservations, most of which are located in arid and semiarid regions of the Western States. About 14 million acres of Indian land receive less than 10 inches of annual rainfall, 23 million acres receive 10 to 15 inches, and 8 million acres receive 15 to 20 inches (22, 1948, p. 371). Most of the remaining 12 million acres receive 20 to 30 inches, which is above the margin for dry farming, although much of this land is of low quality. Only 3 million acres, or 5.2 percent of the Indian holdings, were classified as farming land in 1949. This included 550,000 acres of irrigated land and 2.4 million acres of dry-farming land. Roughly 44 million acres of Indian land were classified as pasture and range. Included in this total were several large areas of desert shrub and brushland and more than 9 million acres of woodland which provided only limited browse. Approximately 10 million acres of the total were basically submarginal for range use, and about half of the remainder was so badly depleted that its range value was nominal. Per-

haps 15 to 20 million acres of the 44 million acres of range land were of fair-to-medium quality. About 7.5 million acres of Indian holdings were classified as commercial forests, including farm forests and woodlots on trust-allotted land.

SOIL CONSERVATION SERVICE.—As of December 31, 1949, the Soil Conservation Service administered 7,415,084 acres of federally owned land in continental United States. Of this total, 7,332,060 acres were administered under authority of title III of the Bankhead-Jones Farm Tenant Act,⁵ 75,538 acres were in irrigation projects under the Wheeler-Case Act, and 7,486 acres were nursery and research areas not on title III land. The title III land included 361,591 acres in 33 areas which were managed by State agencies under long-term leases, and 6,970,469 acres which were managed by the Soil Conservation Service directly, or through local agencies.

Title III land, which is located in "Land Utilization Projects," is submarginal farm land that was acquired by the Government to correct maladjustments in land use. In most of these project areas, federally owned land is intermingled with private holdings and the projects serve as demonstrations of how land primarily unsuited for cultivation may be restored and used beneficially by local people. Local people participate in the management of this land through soil-conservation districts, State grazing districts, and State grazing associations. Around two-thirds of title III land is leased to local organizations. These organizations attend to the details of management, while the Soil Conservation Service provides technical assistance and whatever managerial help is required to develop and maintain a sound land-use program.

Most title III land is grazing and forest land. Of the 6,970,469 acres managed by the Soil Conservation Service in 1949, 6,420,000 acres were grazing land, including 6,386,000 acres used primarily for grazing, and 470,000 acres were woodland. Around 90 percent of the custodial land (land that is managed by State agencies under long-term lease) is woodland, part of which is used primarily for recreation and wildlife, and the remainder is largely grazing land.

DEPARTMENT OF DEFENSE.—In 1950, land administered by the Department of Defense included 10.5 million acres of public-domain land and 10.9 million acres of acquired land in continental United States. The acquired land included about 2.5 million acres of flood-control land administered by the Corps of Army Engineers. Military and civil holdings of the Army amounted to 19.3 million acres, and the Navy held 2.1 million acres.

Use-capability classifications of Department of Defense holdings are incomplete. However, partial classifications show that many of them were used for agricultural purposes before acquisition for defense purposes. For example, a land-use classification of 6.6 million acres bought by the War and Navy Departments during World War II showed that 1.7

⁵ Hereafter, in this report, the term "title III land" is used to refer to land now administered by the Soil Conservation Service under provisions of title III of the Bankhead-Jones Farm Tenant Act of 1937. This includes part of the land acquired in connection with the land-use adjustment programs authorized by title II of the National Industrial Recovery Act (1933) and the Emergency Relief Act (1935). Different terms are used in referring to other land acquired under these earlier acts and assigned or transferred to agencies other than the Soil Conservation Service for administration.

million acres were used for crops, and 2.5 million acres for pasture and range before purchase by the Government (7, *p.* 30). Slightly more than half of the land acquired for airfields, ordnance plants, and storage, was cropland. Around a third of all land acquired was pasture and range land.

Bombing and artillery ranges in particular contained high proportions of grazing land. Public-domain, Forest Service, and other land transferred to the Department of Defense, also contained high proportions of grazing land. Civil land acquired for flood-control purposes has contained high proportions of both crop and pasture land. In many instances, bottomland acquired for flood-control purposes included the best cropland and pasture in the locality. This has frequently been true also of land acquired for airfields.

From 1945 to 1950, land holdings of the Department of Defense were reduced by 3.9 million acres. Some of the disposals were farm land. As previously indicated, the Farm Credit Administration as a designated disposal agency handled the sale of 759,269 acres of surplus military land during this period. In addition, it held 234,144 acres for sale when this inventory was taken. Most of this was farm land. When this inventory was taken, the War Assets Administration also was handling the disposition of 239,146 acres of surplus military holdings, some of which were farm land.⁶

Nevertheless, some of the land now held by the Department of Defense apparently is suitable for farming or grazing. Except in some of the maneuver and bombing areas, however, military uses of the land necessarily are largely exclusive. It is doubtful whether many sizable acreages of military holdings could be made available for agricultural uses until the defense emergency has passed.

FARMERS HOME ADMINISTRATION.—The Farmers Home Administration was established in 1946 as successor to the Farm Security Administration (which in turn had succeeded the Resettlement Administration) and inherited remnants of the land acquired largely by purchase in connection with the rural resettlement program. Resettlement holdings were liquidated under mandate of Congress. The land administered by the Farmers Home Administration in 1950 included some repossessed resettlement land, but consisted mainly of scattered tracts of farm land foreclosed in connection with the administration of farm-loan programs. Ownership was strictly temporary and the statistics are included here merely to complete the inventory.

AGRICULTURAL RESEARCH ADMINISTRATION.—In 1950, the combined land holdings of the Agricultural Research Administration in continental United States amounted to 166,083 acres. These holdings included 69 sites used for research purposes by the Bureau of Animal Industry, the Bureau of Plant Industry, Soils and Agricultural Engineering, the Bureau of Dairy Industry, the Bureau of Agricultural and Industrial Chemistry, the Agricultural Research Center, and the Office of the Administrator. Most of the sites were small tracts of farm land acquired by purchase or gift. In terms of acres, however, more than four-fifths of the total was reserved public domain, used chiefly for animal husbandry and range and pasture experiments.

Contributions of this land to agricultural production cannot be meas-

⁶ Remnants of these holdings were later transferred to General Services Administration.

ured specifically. Commodity values of any products that might be produced on the land for commercial purposes would be small when compared with the value to farmers, ranchers, and the general public of the research and demonstrations carried on. However, some of the products enter commercial channels. This is particularly true for some of the range and pasture experiments, where uniform lots of carefully selected livestock are supplied for grazing tests under cooperative arrangements with local farm and ranch operators.

TENNESSEE VALLEY AUTHORITY.—In 1950, the Tennessee Valley Authority administered 458,631 acres of land area, in addition to about 577,000 acres in stream channels and impoundments. Roughly 307,000 acres of the land area were in forest and woodland, and 78,000 acres were in farm land. Around 24,000 acres of the farm land were used for crops, and 48,000 acres were used for hay and pasture. The remainder was used mainly for park and recreational purposes, wildlife, watershed protection, and communication and power facilities.

Particular attention is given to protection of watersheds in the administration of land held by the Tennessee Valley Authority. Timber cutting is controlled and provisions are made for reseeding and replanting in order to assure maintenance of woodland cover. Use of cropland for cotton and other crops that are conducive to soil erosion is prohibited, and soil-conserving practices are prescribed for all crop, hay, and pasture land. Much of the hay and grain produced is left on the land under share-rent arrangements to provide winter feed for wildlife.

OTHER AGENCIES.—In 1950, seven additional Federal agencies reported rural land holdings. Chief of these, in terms of potential agricultural use, was 239,146 acres of surplus military land which was being disposed of by the War Assets Administration. Some of this land was formerly in farms and was being sold back into private ownership for agricultural use. The remnants of these holdings were transferred later to the General Services Administration.

The Atomic Energy Commission also held some farm land. In 1950 the Commission held a total of 487,519 acres of land. Miscellaneous holdings of rural land reported by other agencies included 31,925 acres held by the Federal Security Administration, 56,406 acres by the Veterans Administration, 45,381 acres by the Department of Commerce, 28,929 acres by the Coast Guard, and 20,588 acres by the Bureau of Prisons. Except for a little farming at the Federal prisons and on hospital sites held by the Veterans Administration, this land was not available for agricultural use in 1949. Moreover, it is doubtful whether agricultural uses would be feasible.

GEOGRAPHIC DISTRIBUTION OF FEDERAL HOLDINGS

Federal holdings of rural land include more than 3,000 administrative or special-use areas.⁷ Among the more important of these in terms of area are 244 national forest, nursery, experimental, land utilization, and related areas, 177 national parks and monuments, 58 Taylor Grazing Districts, around 250 fish and game areas, some 260 Indian reservations, 33 Land Utilization Projects, and more than 1,500 military sites and installations. The areas vary in size from one acre or less for such uses

⁷ Specific classifications are incomplete and sometimes overlapping.

as radio sites and historic monuments to several million acres in some of the larger forests, parks, and other reserved areas.

Outside the special-use areas were thousands of scattered remnants of public-domain land. These included land that was passed over in the selection of homesteads, that failed to attract buyers in public, private, pre-emption, and other land sales, and that was rejected by States and railroads in their selections of in-lieu or indemnity grant land. Thus, in the main, they consisted of the poorest land in the public-domain States. In most instances, tracts that had value for private use were not capable of supporting independent enterprises and could be used efficiently only in conjunction with adjacent land.

In 1950, Federal holdings of rural land were reported in 1,796 of the 3,069 counties in the United States. Federal rural holdings were reported in every county in 11 States, and more than half of the land area in 183 counties in 22 States was in Federal ownership.

In terms of area, most of the Federal land was located in arid, semi-arid, and mountainous regions of the Western States (table 3). The Northeastern, Lake, and Corn-Belt States contained only 3.1 percent of the total acreage; and the Appalachian, Southeastern, and Delta States contained only 4.3 percent. The remaining 92.6 percent was located in the 17 Western States. The Mountain States contained 67.8 percent, the Pacific States 20.7 percent, and the Plains States 4.1 percent. In the Mountain States, 56.3 percent of the total land area was in Federal ownership. Only three States in the Mountain group—Colorado, Montana, and New Mexico—had less than half their area in Federal ownership. In Nevada, which had the highest proportion in Federal ownership, 84.0 percent of the land area was federally owned.⁸

LAND-OWNERSHIP PATTERN

The ownership pattern greatly complicates administration of Federal land. In 1950, Federal land holdings included more than 3,000 reserves and special-use areas and literally thousands of scattered tracts. Moreover, the reservations and special-use areas were interspersed with private holdings, which tended to enlarge and complicate the problem of management. National forests and purchase units contained nearly 48 million acres of non-Federal land that was not under Forest Service administration. Nearly half of the land in the Taylor Grazing Districts was in private ownership, and the grazing districts administered 1.4 million acres of non-Federal land by agreement and Pierce Act leases. More than 800,000 acres of privately owned land and water areas were within exterior boundaries of the national parks. Many wildlife areas, Indian reservations, and title III holdings also contained considerable acreages in private ownership. In some cases, even the military areas embraced private and other non-Federal land holdings (fig. 3).

Land most difficult to manage is the vacant and unreserved public-domain land that is located outside the special-use areas. This land includes numerous small and isolated tracts that are usable only in conjunction with surrounding or interspersed State and private holdings. Generally, land that is suitable for crop production is in private ownership. In most grazing areas, land that contains streams, springs, and other

⁸ Distribution and major uses of Federal land are shown by States in figure 6, p. 20.

TABLE 3.—*Proportion of land area in Federal ownership, by geographic divisions, continental United States, 1949*

Geographic division ¹	Total land area	Federal ownership		
		Total	Proportion of	
			Land area	Total Federal land
North:	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>Percent</i>	<i>Percent</i>
Northeast.....	112,363	2,418	2.2	0.5
Lake States.....	122,717	8,872	7.2	2.0
Corn Belt.....	165,459	2,796	1.7	.6
Northern Plains.....	195,428	12,387	6.3	2.7
Total.....	595,967	26,473	4.4	5.8
South:				
Appalachian.....	124,929	7,288	5.8	1.6
Southeast.....	124,449	6,587	5.3	1.5
Delta.....	93,006	5,594	6.0	1.2
Southern Plains.....	213,073	6,493	3.0	1.4
Total.....	555,457	25,962	4.7	5.7
West (11 States):				
Mountain.....	549,015	309,036	56.3	67.8
Pacific.....	204,883	94,145	46.0	20.7
Total.....	753,898	403,181	53.5	88.5
17 Western States.....	1,162,399	422,061	36.3	92.6
United States.....	² 1,905,362	³ 455,632	23.9	100.0

¹ For the States comprising each geographic division see table 18.

² Includes the District of Columbia (39,040 acres).

³ Includes 14,817 acres not allocated by States.

watering places, or is strategically located for other reasons, is privately owned. In some range-land areas, the primary purpose of private ownership is to gain the use of adjacent public land.

This unsatisfactory pattern of ownership resulted largely from lack of a well-planned land policy in keeping with the physical nature of the different regions. The land policy of the United States was formulated in the belief that the public land should be sold or granted to settlers in small tracts as a means of promoting owner-operatorship of family-sized farms. On the basis of experience under humid conditions, the 160-acre limitation on homesteads was established; it was never adequately modified to meet western conditions. Relaxation of the limitation to permit the homesteading of 320- and 640-acre units in arid and semiarid areas was only a partial solution. In much of the range-livestock area several sections of grazing land, which has access to seasonal grazing or a supplemental cropland base, are required for an efficient family-sized

unit. Access to water is essential, regardless of the size of unit. In the absence of appropriate land classifications—to determine the adequacy of the land base in homestead units and the relationship of the land and

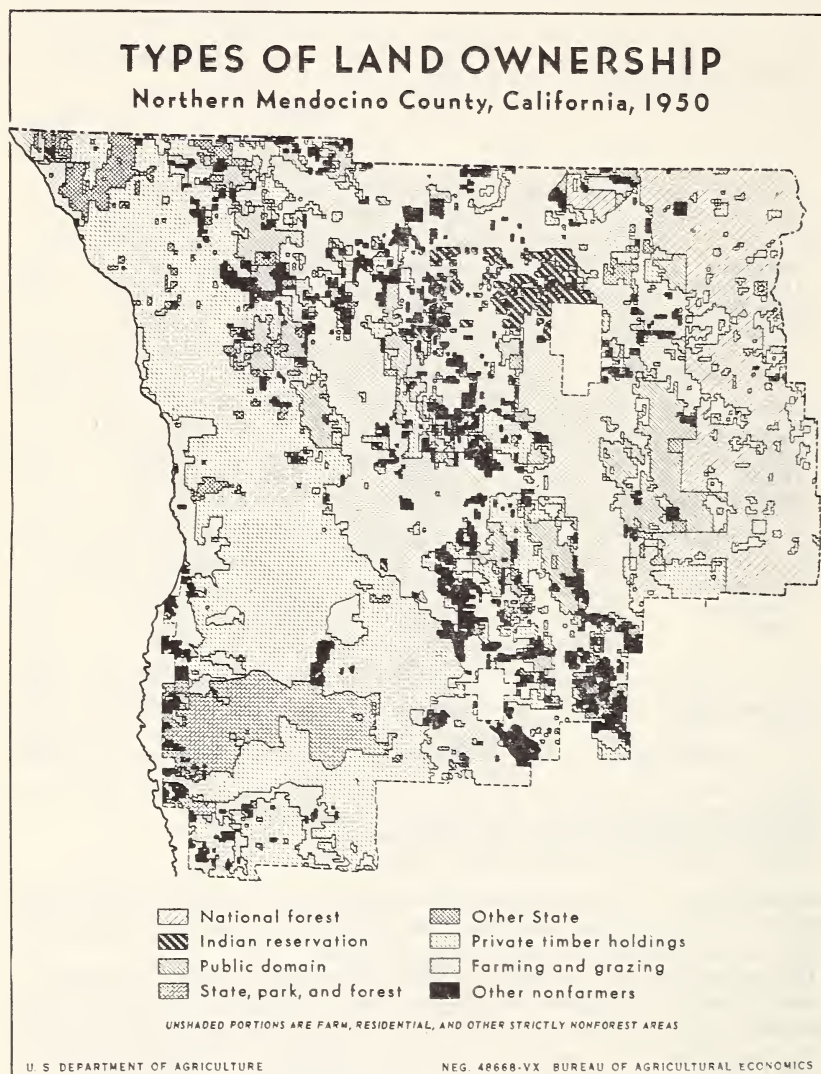


FIGURE 3.—The complicated pattern of land ownership in Mendocino County, Calif., illustrates the scattered nature of public land holdings in the forest-range areas of the West. In the absence of a land policy in keeping with the physical nature of the different regions, homesteading became a means of obtaining control over timberland and of watering places and other strategic tracts that are essential to use of surrounding range. Currently, many large areas of Federal range are usable only by interspersed private landowners, who in turn need the Federal range to round out their operations. This interdependence of the public and private holdings results in some of the major problems of public land administration.

water supply to adjacent areas—homesteading became a method of obtaining control over watering places and other strategic tracts, without which the remaining areas are not usable. As a result, much of the vacant public-domain land is usable only by interspersed private land-owners, and is needed by them to round out their operations. This interdependence of public and private holdings results in major problems in administration of public land.

VEGETATIVE COVER

Both current and potential uses of rural land now in Federal ownership apparently depend largely upon native forest and nonforest cover types. In the arid, semiarid, and mountainous areas of the West, where the bulk of the Federal holdings of rural land in continental United States are located, precipitation, topography, elevation, and other factors tend to preclude extensive modifications in the major cover types except in very limited areas. In the past, large acreages of original woodlands in humid and level or rolling areas were cleared for agricultural uses. In the areas that now contain large acreages of forest land in Federal ownership, however, much of the original woodland that was cleared or cut over has proved to be submarginal for farming. In these areas, neither forestation of land that was originally open grassland, nor seeding of cleared or cut-over land to grasses has been very profitable. In recent years, the general trend in management of both private and public holdings has been toward reforestation of cut-over land and re-establishment or improved maintenance of grasses on original prairies and woodland meadows. Multiple-use management of Federal land has facilitated adaptations in public uses to conform with native vegetative-cover types.

In 1950, 187.8 million acres, or 41 percent of Federal rural land in continental United States, were classified as forest and woodland (fig. 4). Roughly 89 million acres in this total were classified as commercial forests, and 88.0 million acres were classified as noncommercial forests, including about 12.4 million acres in parks and other reserves. Forest and woodland areas contained about 10.8 million acres of rugged mountains and other wasteland. In addition to their values for forestry, recreation, water supply, and watershed protection, the woodland areas contained interspersed grassland- and woodland-grass types capable of supplying forage for domestic animals and wildlife. Of the woodland areas, 86.9 million acres were classified as usable for grazing.

Nonforested Federal land holdings in continental United States amounted to 267.8 million acres, including desert shrubs and brushlands. However about 11.9 million acres in this total were primarily barren. The remaining 256.2 million acres were covered largely with grasses, herbs and shrubs, and contained 238 million acres that were classified as usable for grazing. Because of inaccessibility, limited water supplies, poisonous weeds, and various other reasons, the remainder was not usable for grazing.

Nonforested land included about 7.5 million acres that were classified as usable for farming. Nearly half of this was Indian land that was currently used for farming, and the remainder was farm land acquired for military, flood-control, institutional, and other uses.

Thus, with cover types as a major criterion, 89.0 million acres of Federal land are apparently usable for commercial timber production, 325 million

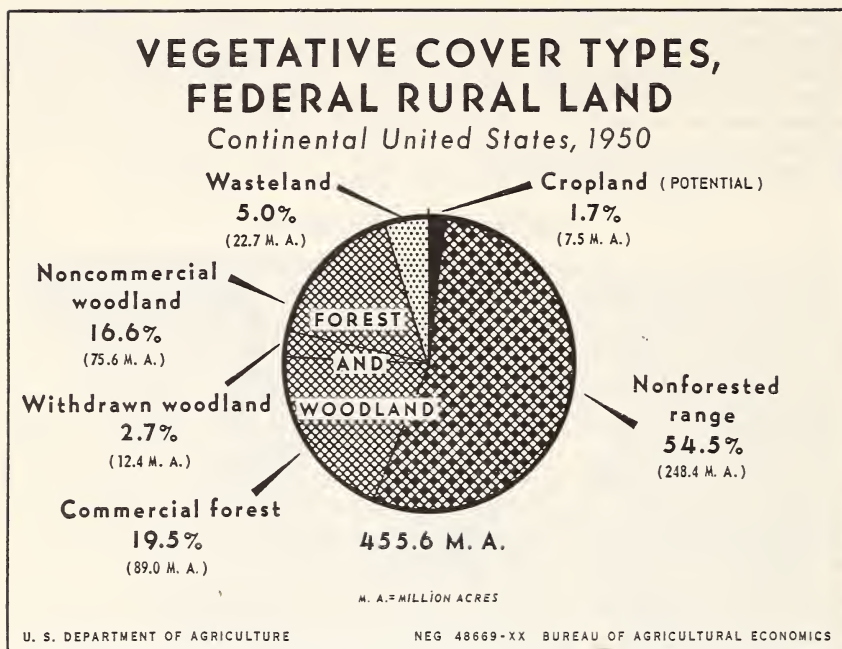


FIGURE 4.—In 1950, Federal rural land holdings included 187.8 million acres in forest and woodland areas, and 267.8 million acres in open-land areas. Forest and woodland areas consisted of 89.0 million acres of commercial forests, 12.4 million acres of forest in parks and other nonforest reserves, 75.6 million acres of other noncommercial woodland, and 10.8 million acres of barren and wasteland. The open-land areas consisted of 7.5 million acres of potential cropland, 248.4 million acres of grasses, herbs, shrubs, and other open-rangeland, and 11.9 million acres of barren and wasteland. Including open grassland and browse in forest and woodland areas, 325 million acres of the Federal rural land in continental United States were capable of supplying forage for domestic livestock and wild game.

acres are usable for grazing, and 7.5 million acres are usable for farming. Most of the remainder can be used for scenic, recreational, wildlife, watershed protection, and other purposes. Even desert wasteland and remote mountain regions are capable of special uses, such as use by the Army for bombing, gunnery, and maneuver areas.

MAJOR LAND USES

MULTIPLE-USE MANAGEMENT

Most Federal rural land is administered under the principle of multiple use. In the case of land in special-use areas, primary consideration is necessarily given to the uses for which the land was reserved or acquired. Some primary uses preclude other uses. Generally, however, multiple uses are permissible. Even the park areas, which must be preserved in their natural state, provide recreational areas, watershed protection, and limited grazing for wild game and domestic livestock. Forest and woodland areas may be used for recreational, wildlife, and watershed purposes, in addition to timber production, and they may also provide grazing for

livestock. Big-game and other wildlife areas cannot be opened to unrestricted grazing, but at times they can be used for seasonal grazing by livestock. This is in addition to incidental forestry, recreational, watershed, and other uses. Except for areas set aside for intensive recreational, military, institutional, and other purposes, most Federal rural land is devoted to two or more simultaneous uses.

PRIMARY AND SECONDARY USES

In 1950, Federal rural land holdings in continental United States included 432.9 million acres of usable land, and 22.7 million acres of barren and wasteland (figs. 5 and 6). A total of 514.2 million acres in supplementary uses was reported for this land in 1949, in addition to the 432.9 million acres in primary uses (table 4, p. 21). Grazing of domestic livestock in commercial timber, park, water-supply, game-refuge, and other primary land-use areas, was an important supplementary use. Forestry management of woodland areas outside the boundaries of national forests was another. Park and recreational uses of forests, water-supply, and wildlife areas were also important. In terms of area, however, the chief supplementary uses were wildlife and watershed protection. Protection of wildlife was a supplementary use for more than a fourth of the Federal land. Attention was given to watershed protection in the management of at least half of the Federal holdings.

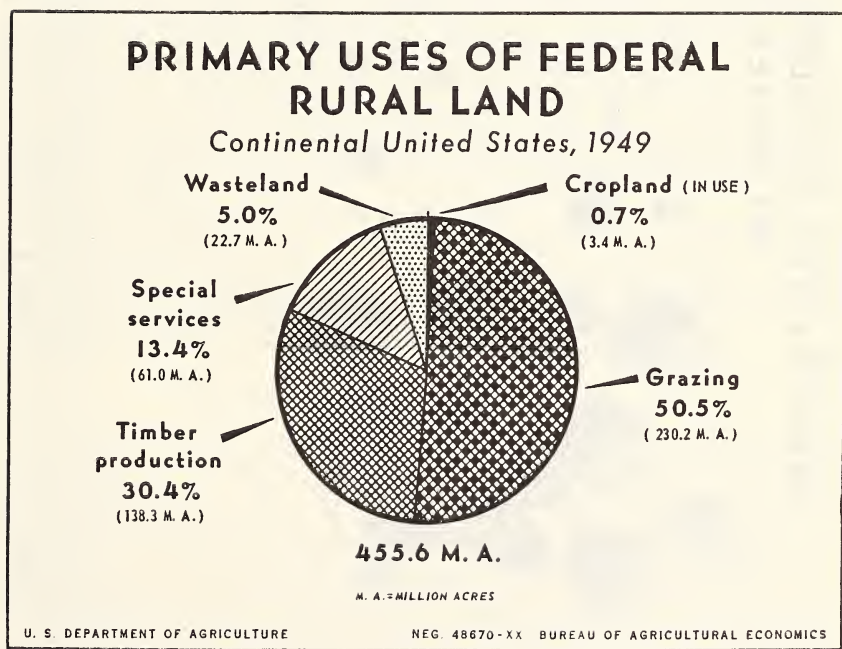
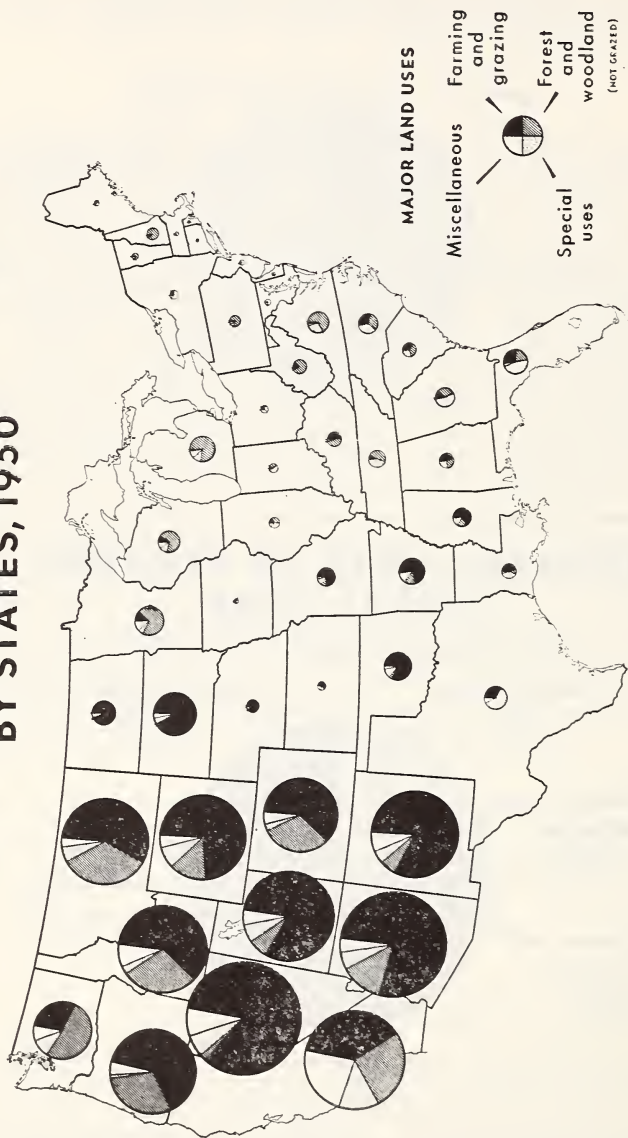


FIGURE 5.—More than half of the Federal rural land in continental United States was used primarily for crop production and grazing in 1949. Grazing was a supplementary use for an additional one-sixth. About 10 percent of the remainder was grazed by sufferance or in trespass. Less than 5 percent of the suitable land was withheld from farming and grazing because of higher priority uses.

MAJOR USES OF FEDERAL RURAL LAND, BY STATES, 1950



U. S. DEPARTMENT OF AGRICULTURE

NEG. 48428-HX BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 6.—In 1950, 23.9 percent of the land area in continental United States was under Federal administration. The pie charts above, which are drawn in proportion to area, show both the distribution and major uses of the Federal rural land by States. The greatest concentration of Federal ownership is in the Western States. In Nevada, 84 percent of the land area is in Federal ownership. In 1949 about 64 percent of the Federal land was grazed and 1.0 percent was used for crop farming. Roughly 20 percent was devoted to forest and woodland uses.

TABLE 4.—*Primary and supplementary uses of Federal land, continental United States, 1949*¹

Use	Primary	Supplementary	Total
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Farming ²	3,425	827	4,252
Grazing.....	³ 230,185	⁴ 74,710	304,895
Timber production.....	⁵ 138,330	⁶ 49,484	187,814
Special uses:			
Park and recreational.....	25,390	⁷ 20,326	45,716
Wildlife.....	4,187	⁸ 127,777	131,964
Military.....	18,975	.....	18,975
Reservoir and water supply.....	11,502	.....	11,502
Watershed protection.....	.....	⁹ 241,070	241,070
Other services.....	961	.....	961
Barren and idle lands.....	22,680	.....	22,680
Total.....	455,635	514,194	969,829

¹ Surface uses only. Large areas have additional value for minerals, etc. Data for States are shown in tables 19 and 20.

² Includes 3.0 million acres of Indian land, not public land in the ordinary sense.

³ Includes 204.5 million acres of open land and 25.6 million acres of noncommercial woodland used primarily for grazing.

⁴ Includes 3.3 million acres of open land and 56.4 million acres of forest and woodland. Also includes an estimated 15.0 million acres grazed in trespass.

⁵ Includes 81.9 million acres used exclusively for forestry and watershed protection and 56.4 million acres that are open to grazing.

⁶ Includes 11.4 million acres in recreational areas, 12.4 million acres in parks and other special-use areas and 25.6 million acres used primarily for grazing. About 10.8 million acres within these totals are rugged mountains, barrens, marshes, swamps and other wasteland.

⁷ Includes reservoir and water-supply areas and fish and game reserves.

⁸ Includes forest land not grazed, water-supply areas, and other areas under secondary wildlife management.

⁹ Includes Bureau of Reclamation holdings, civil land held by the Army Engineers, reservoir areas on land administered by the Soil Conservation Service, 50 percent of forests on Indian land, 75 percent of the Forest Service holdings, and roughly 55 percent of the land administered by the Bureau of Land Management.

AGRICULTURAL USES OF FEDERAL LAND

Generally Federal land in continental United States that is suitable for agricultural use is made available to farm and ranch operators under leases and permits. The Taylor Grazing Act provided for the organization of grazing districts to facilitate the use and management of the grazing land located outside the national forests, parks, and other reservations. In the national forests, when grazing is properly coordinated with watershed management, it is recognized as a primary use for most of the non-commercial forest land and for much of the commercial forest that contains significant areas of open grassland or browse. Grazing is prohibited in national parks as a matter of general policy, but when it appears that such use will not be detrimental to the primary purpose for which the reservation was created, grazing may be permitted at the discretion of the Secretary of Interior. Grazing also is permitted in some of the wildlife

areas, where the livestock grazed do not compete directly with the particular types of wildlife for available forage. Indian land not used by the Indians is made available under leases and permits for agricultural and grazing uses by non-Indians. Most title III land administered by the Soil Conservation Service has been reseeded to grass and is used for grazing under leases and permits. Other Federal land for the most part is used for farming or grazing at the discretion of the administering agencies.

FARMING

In 1950, roughly 7.5 million acres of the Federal holdings, including Indian land under Federal administration, were classified as suitable for crop farming. In 1949, 4.3 million acres were used for farming. Farming was the primary use for 3.4 million acres and a secondary use for 0.8 million acres. Some of the arable land not farmed was used for grazing, but most of it was in military and other special-use areas that were closed to agricultural uses (table 4).

Almost three-fourths of the Federal land used for farming in 1949 was Indian holdings, largely trust-allotted land, which is essentially private property. Much of the remainder was in process of being transferred into private ownership. The latter included irrigated land in process of development and disposition by the Soil Conservation Service (under the Wheeler Case Act) and the Bureau of Reclamation, foreclosed land held temporarily by the Farmers Home Administration, and surplus military land being sold by the Farm Credit Administration.

Data are not available as to specific uses of the Federal land that was farmed in 1949. Only a few agencies reported the acreages of crops produced on lands under their jurisdiction. In most instances when the land was leased out, only the total acreage under farm leases was reported. Thus, it is possible, and perhaps probable, that much of this land was used for pasture and meadow, rather than for crop production.

GRAZING

In 1949, 290 million acres of the Federal lands were used for grazing under leases and permits, and 15 million acres were grazed by free use or in trespass. Of the remaining 20 million acres of forage-producing land, around 10 million acres were not sought for grazing use because the forage was sparse or of poor quality, or because of inaccessibility, inadequate water supplies, the presence of poisonous plants, lack of fences, and various other reasons. The remainder was closed to grazing and protected against trespass because of higher-priority uses, or for such reasons as timber production, range and timber reseeding, water development, and control of undesirable plants.

Grazing was the primary use for 230 million acres of Federal land in 1949, and a secondary use for 75 million acres (table 4). Land used primarily for grazing included 204 million acres of open and brushland, and 26 million acres of woodland. Lands on which grazing was a secondary use included 57 million acres of open land and 18 million acres of woodland. Land grazed in trespass included both forest and open land, mainly the latter.

Trespass grazing was a problem in many of the national forest, park, and wildlife areas, especially those that are interspersed with private land

holdings and those located within "open-grazing" or "free-range" areas of the Southern States. Extensive trespass grazing was done on military land, including some highly productive areas, where leasing did not appear feasible because of impending military needs for the land. The trespass problem most difficult to correct arose in the use of vacant public-domain land outside Taylor Grazing Districts. As pointed out above, this land consists of scattered tracts, alternate sections, and small areas that are interspersed with strategically located private holdings acquired primarily to gain the use of adjacent Federal land. The scattered pattern of ownership and the quality of much of this land make it expensive to provide effective control and management for it, including the leasing and supervision of use, or the fencing and policing of the areas.

RELATIVE IMPORTANCE OF FEDERAL RANGE LANDS

Range and pasture land in Federal ownership contributes materially to the livestock enterprises of the country. The contribution to total production is far less than proportional to the acreage, however, because of the low quality of much of the Federal range land as compared with improved pasture and range in private ownership.

As mentioned earlier, nearly a fourth of the total land area in the continental United States is in Federal ownership, and roughly two-thirds of the Federal land is used for grazing. Thus, around one-sixth of the total land area is Federal range and pasture land. Stated differently, more than half, 55 percent, of the total land area is pasture and range land, and nearly a third of the total pasture and range land is in Federal ownership.

In 1949, around 18.2 million head of livestock were grazed during some part of the year on Federal land (table 6). This included 42 percent of the country's sheep and goats, and 6 percent of the cattle, horses, and mules, or 11.7 percent of the animal units of forage-consuming livestock. Approximately 7.8 million animal units were grazed an average season of 4.5 months (table 5). The aggregate grazing use was 36.1 million animal-unit months. This supplied 4.5 percent of the total roughage required for year-long consumption by all roughage-consuming livestock in the country. Roughage supplied by Federal land amounted to around 7.5 percent of the total produced by all pasture and range land.

Use of Federal range is rather widely distributed among farm and ranch operators. In 1949, more than 69,000 grazing leases and permits to use Federal land were issued, exclusive of Indian holdings (tabulation, p. 25). Almost half of these were for the use of Taylor Grazing District and other holdings administered by the Bureau of Land Management, and more than a third were for the use of land in national forests. The title III land administered by the Soil Conservation Service accounted for about half of the remainder.

In 1949, Indian holdings included around 44 million acres of range and pasture land, which supplied 8.9 million animal-unit months of grazing for 3.2 million head of livestock. Around 18,000 Indians owned the livestock that were grazed on 34 million acres of the Indian land.⁹ The remaining 10 million acres of Indian range land were leased to non-Indians. The leased land supplied about 4.4 million animal-unit months

⁹ Statistics on livestock owned by Indians as of 1944.

TABLE 5.—*Federally owned land used for grazing, continental United States, by geographic divisions, 1949*

Geographic divisions ¹	Grazed					Average months per season
	Area ²	Animal units		Land		
		Total ³	Months of grazing time ⁴	Per animal unit	Per animal-unit month	
	<i>Million acres</i>	<i>Thousands</i>	<i>Thousands</i>	<i>Acres</i>	<i>Acres</i>	<i>Number</i>
North.....	12.1	484	2,833	25.0	4.3	5.9
Northeast.....	.1	9	43	8.5	1.8	4.8
Lake States.....	.7	11	46	68.3	14.1	4.2
Corn Belt.....	1.2	16	107	77.8	11.8	6.6
Northern Plains....	10.1	448	2,637	22.5	3.8	5.9
South.....	9.7	220	1,665	43.9	5.8	7.5
Appalachian.....	1.3	25	136	49.7	9.3	5.4
Southeast.....	1.8	27	210	63.9	8.4	7.8
Delta.....	3.6	21	333	171.6	9.5	⁵ 8.4
Southern Plains....	3.0	147	936	20.7	3.3	6.4
West (11 States).....	268.1	7,141	31,603	37.5	8.5	4.4
Mountain.....	225.8	6,116	27,510	36.9	8.2	4.5
Pacific.....	42.3	1,025	4,093	41.3	10.3	4.0
17 Western States....	281.2	7,736	35,176	36.4	8.0	4.5
United States..	289.9	7,845	36,101	37.0	8.0	4.6

¹ Because of the rounding of the figures the subtotals for geographic divisions do not necessarily add to regional and United States totals. Data for States are given in appendix tables 21 and 22.

² Does not include around 15 million acres grazed in trespass.

³ Authorized grazing reported under leases and permits. In national forests only animals 6 months of age or older are counted. Trespass grazing, including both unauthorized use of Federal land and overstocking under leases and permits, amounted to possibly 450,000 animal units, for some 2.0 million animal-unit months of grazing.

⁴ Includes some grazing under free-use permits, particularly in national forests. In the national forests, 66,492 cattle and 5,280 sheep kept for domestic purposes were grazed for more than 500,000 animal-unit months under free-use permits. In Arkansas alone free-use grazing amounted to 240,000 animal-unit months.

⁵ Computed on the basis of supplemental data supplied by the Forest Service relating to free-use grazing in national forests in this area.

Compiled by the Bureau of Agricultural Economics from data supplied by the administering agencies.

of grazing, or roughly half of the total supplied by Indian land. Data are not available as to the number of leases and permits involved. The number was relatively large, however, because of the large number of trust-allotted tracts that were leased out. Possibly 15,000 to 20,000 non-Indians had leases and permits to use Indian land in 1949, including trust-allotted tracts.

Number of grazing leases and permits on Federal land,
continental United States, 1949

Agency:	Permits	
	Number	
Forest Service ¹	26,826	
Bureau of Land Management ²	31,846	
Soil Conservation Service ³	5,327	
Fish and Wildlife Service ⁴	726	
National Park Service ⁵	534	
Other Agencies ⁶	4,000	
Total.....	69,259	

¹ Annual Report of Chief of Forest Service, 1949, p. 41 (25). Includes 21,088 paid permits and 5,728 free permits.

² Annual Report of Director of Bureau of Land Management, 1949, p. 239 and Statistical Supplement, 1949, p. 85 (20) includes 10,765 Taylor Act leases (sec. 15).

³ Annual Report of Chief of Soil Conservation Service, 1949, p. 53 (29).

⁴ Annual Report of the Secretary of Interior, 1950, p. 287 (22) does not include 620 who farmed and 394 who cut hay from National Wildlife Refuges.

⁵ Data supplied by National Park Service.

⁶ Estimated. Includes civil and military, reclamation, Tennessee Valley Authority, and miscellaneous other land. Does not include Indian land, some 10 million acres of which are leased to 15 to 20 thousand non-Indians.

In addition to the authorized users of Federal and Indian land, there were many trespass users. Many of these used small, scattered remnants of public domain which had so little value that organized management was not feasible. In terms of livestock grazed, however, most of the trespass use was in military, flood-control, forest, park, and other areas having relatively good forage. There was also extensive trespass use in numbers of livestock grazed, season of use, and area of range under grazing permits. In 1949 these infractions alone were estimated to involve 177,500 head of livestock and 540,000 animal-unit months of forage on the land in Taylor Grazing Districts (22, 1949, p. 239). Total trespass uses of all Federal range probably exceeded 2.0 million animal-unit months.

When allowance is made for trespass uses, the Federal range supplied seasonal grazing for about 12.3 percent of the animal units of forage-consuming livestock in continental United States in 1949. Despite short grazing seasons in some areas, the Federal range supplied an estimated 38 million animal-unit months of forage, which is about 4.7 percent of the year-long roughage requirement for all forage-consuming livestock.

Although this forage production does not appear large in terms of the national total, when interpreted in terms of beef production, its significance is apparent. The 38 million animal-unit months of forage would be the equivalent of year-long pasture for more than 3.2 million animal units of beef cattle. Assuming annual gains of 300 pounds a head, the forage would be sufficient to produce 960 million pounds of beef.¹⁰

In some of the Western States, where most Federal land is located, the value of the Federal range is considerably greater than the forage production of the land would indicate. This is primarily because of the interdependence of the Federal range and commensurate farm and ranch land in private ownership. In many areas of the West, the size of farming

¹⁰ Ranch studies indicate that in typical cow-calf-yearling set-ups average animal gains per head do not often exceed 250 pounds. In view of the fact that calves under 6 months of age at the beginning of the grazing season are not counted under many of the grazing permits, it is believed that this estimated gain of 300 pounds per animal unit is conservative.

and ranching operations is determined mainly by the amount of forage available on the Federal range.

Almost three-fifths, or 58 percent, of the Federal land is range land located in the 11 Western States. As mentioned earlier, 53.5 percent of the land area in the 11 Western States is in Federal ownership and 66.5 percent of the Federal land in these States is used for grazing. Thus more than a third, 36 percent, of the land area in the 11 States is federally owned range land.

Available data indicate that in 1949 about 51 percent of the animal units of livestock in the 11 Western states were grazed on Federal land. Much of this grazing was seasonal, however, and some of the stock were grazed under two or more permits. The average grazing season on Federal land in the area was 4.4 months, and Federal range supplied 31.6 million animal-unit months of grazing (table 6). This was roughly 19 percent of the total pasture and other roughage required for year-long consumption by forage-consuming livestock in the area (table 6).

In the eight Mountain States, 68 percent of the animal units of forage-consuming livestock on farms and ranches were grazed on Federal land. The area had 9 million animal units of range livestock, which required 108 million animal-unit months of forage for year-long maintenance. The Federal range supplied an average of 4.5 months of grazing for 6.1 million animal units, or a total of 27.5 million animal-unit months. This was 25 percent of the total forage requirement. In Arizona, Nevada, and Utah the Federal range supplied 48.4, 41.9, and 40.7 percent, respectively, of the total forage requirement (table 7).

The federally owned grazing land in the 11 Western States consists mainly of Forest Service and Bureau of Land Management holdings. The Forest Service administers 24 percent, and the Bureau of Land Management, 59 percent of the Federal range in the 11 States. This range land is used by established farm and ranch operators to supplement their private holdings and the uses of the land of the two agencies tend to be complementary.

Forest Service land in the 11 Western States is located chiefly on mountain slopes and plateaus where moisture is sufficient for tree growth. Hence, it is relatively well watered. Because of high elevation, heavy snowfall, and short growing season, grazing of forest land is limited mainly to the summer months, usually June to September (21, p. 36).

The land administered by the Bureau of Land Management consists largely of arid and semiarid plains and interspersed mountains and valleys, together with arid, desert areas. The major exception to this is the highly productive reseeded O and C timber land in western Oregon (fig. 2). The vegetation varies in type from the bunch grass range and timber land in the more favorable precipitation areas to the desert shrubs of the arid areas. Grazing use extends through all seasons, but many parts of the Bureau's holdings are best suited to fall, winter, and spring grazing.

The best grazing land in the 11 Western States is the pasture land in farms and ranches. Some of this land, particularly the irrigated pasture, has a very high carrying capacity, and some provides year-long grazing. Farm and ranch land also includes meadows and fields that are usable for grazing after crops are harvested. Croplands may provide either forage or feed grains, or both, in accordance with the needs of individual farm and ranch operators.

Thus, in practice, summer range in national forests, spring-fall and

winter range in grazing districts, and privately owned range and cropland, are complementary parts of the agricultural structure in the 11 Western States. National forest and Taylor Grazing District lands generally cannot support independent farming or ranching operations, but their use is essential to the maintenance of well-rounded operations on farms and ranches already established in the area. Therefore, a sound agricultural program for the West requires integration of national-forest and grazing-district land with related agricultural resources in a way that will promote the social and economic welfare of the dependent population.¹¹

TABLE 6.—*Proportion of the forage-consuming livestock grazed on Federal land, specified groups of States, United States, 1949*

Forage-consuming livestock	Unit	United States	17 Western States ¹	11 Western States ¹	8 Mountain States ¹
	<i>Thousands</i>				
On farms, January 1 ² :					
Cattle, horses, and mules . . . do		86,544	38,647	14,498	9,501
Sheep, lambs, and goats . . . do		30,526	23,509	12,566	9,806
Total livestock	do	117,070	62,156	27,064	19,307
Animal units grazed ³ . . . do		67,162	32,114	13,927	8,980
Animal-unit months of grazing ⁴	do	805,944	385,368	167,124	107,760
Grazed on Federal land ⁵ :					
Cattle, horses, and mules . . . do		5,257	5,150	4,601	3,775
Sheep, lambs, and goats . . . do		12,937	12,922	12,691	11,702
Total livestock	do	18,194	18,072	17,292	15,477
Animal units grazed . . . do		7,845	7,736	7,141	6,116
Animal-unit months of grazing	do	36,101	35,176	31,603	27,510
Proportion grazing on Federal land:	<i>Percent</i>				
Livestock ⁶	do	15.5	29.1	63.9	80.2
Animal units grazed ⁶ . . . do		11.7	24.1	51.3	68.1
Animal-unit months of grazing	do	4.5	9.1	18.9	25.5

¹ For a list of States in these areas see table 22.

² Bureau of Agricultural Economics (17).

³ Bureau of Agricultural Economics (18). Hogs and poultry are not included.

⁴ Year-long, or 12 months for each animal unit.

⁵ Compiled by the Bureau of Agricultural Economics from data supplied by the administering agencies. The grazing reported by the respective agencies was that under permit, and no allowance is made for estimated trespass grazing. Livestock grazed under two or more permits issued by the same agency were counted only once.

⁶ These proportions are overstated to the extent that the same livestock are grazed under two or more permits issued by different agencies. In some areas, the stock summer-grazed in national forests are grazed at other seasons in Taylor Grazing Districts.

¹¹ For a detailed discussion see THE WESTERN RANGE (27, p. 457).

TABLE 7.—*Proportion of forage requirement supplied by federally owned land, continental United States, by specified areas, 1949*

Areas ¹	Forage requirement	Forage supplied by Federal land	
		Quantity	Proportion of total
	1,000 AUM ²	1,000 AUM ³	Percent
Northeast.....	66,180	43	0.1
Lake States.....	96,984	46	(⁴)
Corn Belt.....	137,280	107	0.1
Appalachian.....	56,184	136	0.2
Southeast.....	30,492	210	0.7
Mississippi Delta.....	33,456	383	1.1
Southern Plains.....	110,460	936	0.8
Northern Plains.....	107,784	2,637	2.4
Mountain.....	107,760	27,510	25.5
Pacific.....	59,364	4,093	6.9
United States.....	805,944	36,101	4.5
17 Western States.....	385,368	35,176	9.1
11 Western States.....	167,124	31,603	18.9
Mountain States:			
Arizona.....	8,976	4,343	48.4
Colorado.....	20,712	2,322	11.2
Idaho.....	12,240	2,580	21.1
Montana.....	21,348	3,727	17.5
Nevada.....	6,744	2,824	41.9
New Mexico.....	13,992	4,299	30.7
Utah.....	9,564	3,888	40.7
Wyoming.....	14,592	3,527	24.2
Total.....	⁵ 108,168	27,510	25.4
Pacific States:			
California.....	36,408	1,800	4.9
Oregon.....	13,320	1,779	13.4
Washington.....	10,512	514	4.9
Total.....	⁵ 60,240	4,093	6.8

¹ For States comprising the geographic divisions see table 18.

² Computed on the basis of 12 months maintenance for the animal units of forage-consuming livestock exclusive of hogs and poultry on farms in 1949 as reported by Bureau of Agricultural Economics (18).

³ Table 22.

⁴ Less than 0.05 percent.

⁵ Estimates for the separate States include forage consumed by poultry and hogs, amounting to 1,284 animal-unit months in the Pacific and Mountain regions.

Multiple and competing uses of western range land make it particularly difficult to administer. Grazing is only one of the many recognized uses for this land. In addition to providing forage for domestic livestock, it is used for recreation, for water supply and flood control, for production of timber and minerals, for wildlife, for Indian welfare, and for many other purposes. As pointed out above, national forest land in particular

is important for watershed protection. Therefore, in administering range land, especially in the national forests, great care must be taken to protect the water supplies of irrigation farmers and residents of municipalities and valley communities, and the interests of recreationists, sportsmen, tourists, and others. Also the range and forest must be managed in a way that will keep them productive.

Users and beneficiaries of western range land want stability of tenure, or security of expectations in their use of Federal land and benefits from it, so that they can operate efficiently over a period of years. Although Federal agencies are in sympathy with these desires and are fully cognizant of the basic needs, their policies and practices necessarily differ somewhat in regard to the issuing of grazing permits and the nature and extent of the controls they exercise over the use of Federal land.

LEASES AND PERMITS TO USE FEDERAL LAND

As mentioned above, federally owned farming and grazing land is made available to farm and ranch operators under leases and permits. Leases and permits convey about the same use privileges. They differ primarily with reference to their implications of permanence. One-year renewable leases are commonly used, although some of the agencies now issue longer-term leases. One-year permits are extensively used also, but in most areas 10-year permits prevail. In practice, leases that are not based on preferences are recognized as temporary conveyances of use privileges, which may or may not be renewed. In most instances permits are based on preferences and permittees tend to regard them as permanent assignments of available range. Farm and ranch operators commonly refer to them as "rights," and permits frequently are bought and sold in conjunction with commensurate privately owned properties.

Trespass uses of Federal land are unauthorized uses which carry no land-tenure implications except that undisturbed use may develop into an expectancy of use-privileges by the trespassers. Many farm and ranch operators who now use Federal land in trespass have organized their operations with the apparent expectation that they will not be restrained in this use.

FOREST SERVICE PERMITS.—Permits to use range land in national forests are issued to farmers and stockmen on the basis of grazing preferences. A grazing preference is a priority over other applicants for grazing a specified number of livestock on a specified allotment or unit of national-forest range. To be eligible for a grazing preference, a farmer or stockman must live in or near the national forest and must own ranch property, use of which is complemented by the grazing of livestock for part or all of the year on the national-forest range land.

Preference holders retain the privilege to graze the number of livestock covered by the preference so long as adequate forage is available and can be used without conflict with other uses, and so long as holders conform to regulations of the Department of Agriculture applying to this use. The amount of grazing that can be permitted at any one time must be such as to safeguard watershed values, forage production, and other resources, as well as the industries and uses dependent upon them. If weather, unsound use, or other factors reduce available forage, preference holders are entitled to graze their livestock only up to the grazing capacity of the range units or, on community ranges, up to their proportionate shares.

Grazing preferences on national forest land may be acquired by: (1) Prior use of the land for grazing before its inclusion in a national forest; (2) inheritance of the permittee's livestock or ranch, or both; (3) purchase of a permittee's livestock or ranch, or both, accompanied by a waiver of the preference held by the seller; (4) renewal of permit formerly held by a co-partnership or corporation of individuals for the pooling of preferences; and (5) if surplus range is available, regular use of forest range under temporary permit for five consecutive years and ownership of commensurate ranch property (24, p. 3).

In issuing and renewing permits, the Forest Service employs "maximum," "exemption," and "protective" limits, which may vary from area to area. "The maximum limit is the number of stock above which an increase in preference to any person, firm, or corporation may be refused." "The exemption limit is the number of stock below which the preference of no owner of dependent commensurate ranch property used primarily for the production of livestock will be reduced for purposes of distribution." "The protective limit is the number of stock for which the permits of Class A owners of improved farms devoted to the production of diversified crops or those who otherwise meet Class A qualifications will be exempt from reduction in their renewal, except where sufficient reductions for range, forest, or watershed protection cannot be made from preferences in excess of the protective limits." (26)

Thus, the national forest range is used to round out the operations of established farm and ranch operators and to protect the operations of family-sized units. Preferences or permits are related directly to ownership and use of commensurate land. And, within limits imposed by multiple-use management, an effort is made to provide security of tenure. Provision is made for transfer of preferences, and for re-assignment in the event of nonuse. Maximum limits are applied to prevent concentration of preferences in the hands of large operators, and reductions in numbers of permitted livestock may be required when a ranch is sold or transferred. Additional protection to small operators is provided by the exemption and protection limits, which may require reductions in permits of large operators both for distribution and to prevent application of required reductions to permits of the small operators.

Numbers of livestock grazed under permits are necessarily adjusted from time to time because of weather and other factors that affect the carrying capacity of the range. Restrictions on grazing also may be required to protect forests, wildlife, watershed values, and other resources. Required land-use adjustments and regulatory measures are worked out with local advisory boards, however, in order that full consideration may be given to the interests and needs of the permittees.

TAYLOR GRAZING DISTRICT PERMITS.—The Grazing Districts organized under the Taylor Act (28) and administered by the Bureau of Land Management issue permits and licenses on the basis of "preferences," which entitle holders to special consideration over other applicants for available range. In areas where full adjudication has been obtained the operator may have a 10-year permit rather than a license that must be renewed annually. Individuals holding permits are not necessarily in a more desirable preference class than those with licenses. Both provide for more or less permanent tenure in use of the land involved.

Preference for use of Bureau lands is based on a combination of commensurability and dependency by prior use. Commensurability is a

measurement of the ability of privately controlled ranch lands to feed the livestock during the winter or the period when the animals are not on the district range. Dependency by use is determined by the degree to which the operator used the public lands during the 5 years immediately preceding the date when the land involved was added to a grazing district.

Commensurability, prior use, and other criteria used in the determination of preference in grazing districts are carefully defined in regulations for the administration of these districts, and the preferences are regarded as a more or less permanent evaluation of individual shares in grazing resources. Preferences are stated by class; they designate the animal units and the animal months use of the Federal range, and they fall into three major categories—class I, class II, and temporary. Under class I, which is the preferred class, the operator is qualified by commensurability, and dependency by use during the priority period, for a specified number of animal units and period of use. Under class II, the operator is qualified by commensurability of ranch lands that are dependent by location but were not used with the Federal range during the priority period. Class II is considered only after the class I demand has been satisfied. Temporary use may be allowed to a potential class I or II applicant during the interim of adjudicating the preference or when excess use is temporarily available because of nonuse by the class I or class II operators.

Although class I and class II preferences are relatively permanent assignments of individual shares in grazing resources of the district, they are subject to both separate and collective adjustments. In no case does a license or permit convey grazing privileges in excess of the carrying capacity of the range (19, sec. 6, c. 3). In the event of range depletion resulting from drought or other causes, the grazing privileges that may be exercised under any license or permit may be reduced in whole or in part, and for such period of time as may be necessary (19, sec. 6, c. 8). The grazing land also is subject to withdrawal from grazing use for special purposes (19, sec. 6, c. 5). Moreover, in each grazing district a sufficient carrying capacity of Federal range is provided for the maintenance of a reasonable number of wild game animals, to use the range in common with livestock-grazing in the district (19, sec. 5b). Thus, the permits are subject both to annual and long-term adjustments and to suspensions and cancellations.

Individual permittees in a district may be affected quite differently by these changes. About half of the animal-unit months under grazing-district permits are grazed in allotments set aside for the exclusive use of individual permittees. The remainder are grazed in community pastures and ranges used by two or more operators. If required long-term adjustments in land use differ among the grazing or leasing units, the various operators are affected differently.

The Bureau of Land Management does not use maximum and minimum limitations and transfer cuts in issuing and renewing grazing permits. In any season when forage production is below average, aggregate grazing is prorated among holders of class I and class II preferences alike, according to the number and animal-unit months of the preferences. Long-term adjustments are accomplished in the same way after first disposing of the temporary use. If an operator does not desire to use his privilege he may abandon it, apply for nonuse, or make application to transfer the privilege to the owner of other commensurate property. If the request for nonuse is granted, the privilege remains in good standing. Application for

transfer of the privilege may be granted provided the new base property is adequately commensurate, if the transfer will not adversely affect the local economy, and if proper range management is maintained and other minor requirements are met.

Both the base properties and the grazing privileges on the Federal land in Taylor Grazing Districts may be transferred with a minimum of restrictions. A transfer of a base property entitles the transferee, if otherwise properly qualified, to all or such part of a license or permit as is based on the property transferred. Licenses or permits based on leased land transfer with the land unless such transfer would interfere with the stability of livestock operations or with the proper range management. A license or permit based on one tract of land may also be transferred to another tract of land if the new base property is adequately commensurate and if such transfer does not interfere with the stability of livestock operations, or proper range management, or if it does not adversely affect the local economy. An operator whose dependent land has a carrying capacity in excess of that necessary for support of permitted livestock during that period of the year for which they are to be kept on such land may dispose of the surplus without affecting his preference. Holdings of base properties and grazing privileges are not restricted because of size of operations so long as the operator can use the land efficiently and the established local economy is not affected adversely.

SOIL CONSERVATION SERVICE PERMITS AND LEASES.—Grazing permits issued by the Soil Conservation Service on its title III land are related to "adjustment" and "maximum" limits established within each project (30, *par.* 44732). In rating claims for allocation, consideration is given to prior use, commensurability, and dependency. Three classes of preference are established—class A, adjusted class A, and class B. Under the class A preference, the operator is qualified by prior use, commensurability, and dependency for a specified number of animal units. Under the adjusted class A preferences, the operator is qualified in all respects except a history of prior use. An applicant has class B preference for the number of animal units for which his base property is commensurate or the number for which his base property is dependent, whichever is the smaller, in excess of his class A or adjusted class A, if any. An adjustment limit is established to designate the minimum size of operating unit considered adequate for an average family during a long period. A maximum limit also is established to designate the maximum size of operating unit an applicant will be assisted to build by the granting of grazing privileges.

Grazing capacity made available through the application of the maximum limit and through nonuse policies is offered first to operators whose units are below the adjustment limit and second to operators with units below the maximum limit. If the estimated grazing capacity of title III land is inadequate to satisfy substantially all class B preferences for which application has been made, the amount of grazing available is prorated on the basis of the class B preference for which each operator applied and for which he is qualified. Once established, all preferences have equal status.

If grazing is available above the preference permits, temporary permits are issued first to preference holders and then to others. Grazing permits are issued annually on an animal-unit basis. If seasonal reductions in grazing are required because of drought or other adverse range conditions, stock under temporary permits are removed first and any further reduc-

tions are prorated on the basis of the number of animal-units specified in the permits without reference to the basic preference.

Changes in the control of dependent commensurate property necessitate adjustments in the original preference. If at any time a permittee's dependent commensurate property ceases to be commensurate for the full number of livestock for which he has established a preference, the preference is reduced accordingly. When permittees acquire or develop feed base land on which preferences have not been established, the commensurability and dependency of such land may be ascertained and the permittee's preference increased accordingly up to the adjustment limit provided surplus grazing is available. Preferences may be increased above the adjustment limit provided all other preferences have been satisfied and additional grazing capacities are available. Whenever local conditions require it, project criteria may provide that permittees who increase the size of their total operating units above the maximum limit through acquiring control over additional grazing or feed base land, will have their preferences reduced by the amount of the grazing capacity of the land acquired, except that such reductions shall not reduce the total operations below the maximum limit.

Preferences for grazing privileges on title III land cannot be transferred by sale, gift, or other devise. Whenever the ownership or control of all or part of a commensurate and dependent property, upon which a preference has been established is transferred, the preference based on the property transferred reverts to the Government. However, the preference may be reissued to the new owner under certain conditions. Preferences of permittees with total operating units less than the maximum may be increased through the acquisition of additional commensurate property on which preferences have been established, as long as the operating unit does not exceed the maximum limit.

When the ownership or control of dependent commensurate property which has formed the basis for a preference is transferred to an operator with no previous preference, the operator who acquires the commensurate land is eligible for reallocation of preferences formerly based thereon. Exceptions are that when the total operating unit exceeds the maximum limit not more than 50 percent of the preference in excess of the maximum limit may be deducted, provided no deductions are made to provide grazing for new applicants. Applicants who acquire operating units through direct inheritance (from spouse or parents) are eligible for the preference formerly based thereon regardless of the size of their total operating unit. Applicants who acquire operating units through indirect inheritance are treated the same as buyers.

Grazing preferences and permits may be reduced for nonuse and may be revoked for violations of the regulations. If nonuse exceeds 10 percent of the preference, the permittee is required to apply for a nonuse permit in advance of the grazing season and a charge is made for the amount of nonuse. Grazing privileges turned back under nonuse permits are allocated to others under temporary permits. If nonuse exceeds 10 percent of the preference for 5 years, the preference may be reduced to the extent of nonuse for the year of least nonuse. Failure to pay for nonuse will result in a revocation of the preference to the extent of nonuse. Preferences may be revoked in full for violations of the Rules and Regulations of the Secretary of Agriculture or the terms of the permit after notice by registered mail and an opportunity for hearing.

Thus the permits issued by the Soil Conservation Service are essentially the same as those issued by the Forest Service. Both agencies set limits on size of operations and try to assist small operators in building up and maintaining units that are adequate for an average family. On the other hand, the Bureau of Land Management bases its permits on commensurability and prior use, whichever gives the smaller number of animal units (8, p. 16).

OTHER LEASES AND PERMITS.—Although the above agencies administer about 82 percent of the Federal land used for grazing, several other agencies have jurisdiction over range and pasture land that is of local significance. The grazing of some of this land is authorized under short-term leases or permits on the basis of competitive bids and some is leased on the basis of preference. Principal lands available for lease are public-domain land and reclamation withdrawals outside Taylor Grazing Districts, and land held for military purposes.

The Bureau of Land Management administers about 36 million acres of land aside from Taylor Grazing Districts. In 1949, 12.5 million acres of this land were leased for grazing. Most of these leases were handled by grazing district offices. The remainder were handled by Bureau of Land Management forest district offices and by land and survey offices. Adjudication of lease applications is covered by specific regulations. In all cases, owners or lessees of adjoining land are considered as preference applicants. Most of the leases are for a period of several years and a majority are for the maximum allowable tenure of 10 years.

The Bureau of Reclamation handles grazing leasing on most of the reclamation withdrawals located outside Taylor Grazing Districts and national forests.¹² In 1949, about 700,000 acres of grazing land were leased to stockmen by the Bureau of Reclamation. Grazing privileges on this land usually were sold at public auction. In partially completed irrigation projects, however, settlers in the completed portions can lease adjacent undeveloped land for grazing without competitive bidding.

In leasing military land for agricultural purposes, former owners are given an opportunity to lease at fair market value. Land not leased by former owners is advertised for bids. After such advertising, leases may be negotiated by obtaining two or more informal quotations for all land for which no bids or unsatisfactory bids were received in response to the advertisement. Rentals are for cash, usually for 1 year and in no case for more than 5 years. The cost of fences and other improvements is borne by the lessee, and the leases are subject to revocation (with compensation) upon 30 days' notice. Existing leases may be extended without advertising, provided rentals are in accordance with prevailing cash rental prices for comparable land in the locality (7, pp. 74-78).

Indian land leased to non-Indians is managed by the Indian agencies, and leases are adapted to local situations. Most trust-allotted land is leased to individuals on the basis of competitive bids. Permits are used in connection with some of the tribal land, but individual allotments usually are made. Indians are encouraged to use Indian land. If an Indian operator is in position to use Indian land, he is ordinarily given preference in leasing the land.

¹² Reclamation withdrawals in Taylor Grazing Districts are managed by the Bureau of Land Management, and the Forest Service usually manages those in national forests, under cooperative agreement.

LAND-USE CONTROLS

Most of the grazing permits and leases issued by Federal agencies specify both the grazing season and animal-unit months of grazing. Some of them require certain range-management practices also. Development of reliable methods of range survey during recent years has made possible the preparation of management plans for individual ranches and range allotments. Range surveys have been widely used by the Forest Service in administration of national forests, by the Bureau of Land Management in Taylor Grazing Districts, and by the Soil Conservation Service and the Production and Marketing Administration in aiding stockmen to develop management plans for their ranches (25, 1949, p. 12).

RANGE MANAGEMENT PRACTICES.—Basic range-management practices developed for national forests and other land include: (1) Grazing the class or classes of livestock particularly adapted to each area; (2) stocking in accordance with estimated grazing capacities (determined for the several major range types); (3) establishing suitable seasons for grazing the different elevational zones, particularly in relation to readiness of plants for grazing; (4) obtaining more uniform and effective use of available forage and preventing localized damage to range by better distribution and handling of livestock. Better distribution of livestock can be obtained through such methods as "improved water distribution, improved salting practices for cattle, and open quiet herding of sheep and goats and bedding them down in a new place each night" (25, 1949, p. 11).

Concerning the need for improved management of western range lands, the Chief of the Forest Service recently said:

"On western ranges a critical balance exists between climate, plant growth, and utilization. This makes necessary the development of methods of management especially adapted to the different western range types and conditions. Because of failure to recognize this need, excessive grazing during the settlement of the West resulted in serious range deterioration. Palatable plants were replaced by a thinner stand of less palatable plants. Sagebrush and other low-value shrubs increased greatly, and many foreign annuals crowded in. Grazing capacity was greatly reduced.

"Even now, after considerable improvement in some areas in recent years, average grazing capacity of western ranges is little more than 50 percent of what it was originally, or what it should be now. Reduction of the protective plant cover has permitted the fertile topsoil to be washed or blown away in many areas, increasing the difficulty of restoring range and watershed values." (25, 1949, p. 11.)

LIVESTOCK NUMBERS.—The number of animal units permitted to graze on Federal land in 1949 was about 7 percent less than in the prewar period. In Taylor Grazing Districts, the number was somewhat higher than when the original 32 districts were organized in 1935, and was about the same as in the late 1930's. This may also have been true of land administered under section 15 of the Taylor Grazing Act. This increase was the result primarily of an expanding program which now includes administration of land that was not included in the original 32 districts or was not under grazing lease. However, in the national forests, particularly in areas that are highly susceptible to erosion, grazing has been reduced in recent years, and apparently, if the production capacity of the range is to be improved, further temporary reductions may be necessary. The number of animal units grazed in national forests in 1949 was 28 percent less than in 1935-39, and roughly 50 percent less than during World War I.

In this regard, the Chief of the Forest Service said, in 1945:

"To overcome the adverse effects of severe overstocking of National-forest ranges during World War I, reductions in stocking of about 45 percent were made between 1918 and 1945. Despite these heavy reductions recurrent and prolonged droughts and other adverse factors have hampered progress toward correcting soil erosion and other unsatisfactory conditions and placing all national-forest ranges on a sustained yield basis. As a result, the Forest Service is still faced with a serious range problem. In many places, further drastic adjustments, some involving complete exclusion of livestock will be necessary." (25, 1948, p. 23.)

From 1945 to 1949, livestock was excluded from almost 10 million acres of national forest range, and the number of animal units permitted to graze was reduced about 16 percent (table 8). A further reduction of about 2 percent in the number of livestock grazed was contemplated for 1950 (24, p. 8).

AREAS GRAZED.—Since 1935, the areas of Federal land open to grazing have shifted considerably and the acreage of Federal land used for grazing

TABLE 8.—*Livestock permitted to graze in national forests and Taylor Grazing Districts, continental United States, 1940-49*

Administrative area	Area grazed	Animal units grazed ¹	Animal-unit months grazed ²	Acreage grazed per AUM
	1,000 acres	Thousands	Thousands	Acres
National forests:				
1940.....	84,714	2,167	10,896	7.8
1941.....	84,321	2,133	10,653	7.9
1942.....	84,194	2,143	10,731	7.8
1943.....	84,832	2,120	10,566	8.0
1944.....	84,657	2,081	10,238	8.3
1945.....	83,402	1,984	9,671	8.6
1946.....	83,166	1,946	9,182	9.1
1947.....	81,073	1,929	8,709	9.3
1948.....	78,177	1,892	8,450	9.3
1949.....	73,857	1,745	8,070	9.2
Taylor Grazing Districts:				
1940.....	140,850	3,787	13,832	10.2
1941.....	144,873	3,900	15,369	9.4
1942.....	141,899	3,745	15,271	9.3
1943.....	141,916	3,751	15,061	9.4
1944.....	142,205	3,833	15,745	9.0
1945.....	145,778	3,760	15,573	9.4
1946.....	148,130	3,688	15,254	9.7
1947.....	142,140	3,511	14,994	9.5
1948.....	151,707	3,341	14,726	10.3
1949.....	148,461	3,583	14,572	10.2

¹ An animal unit of livestock as used in this table equals 1 horse, 1 mule, 1 head of cattle, and 5 head of sheep and lambs. Animals under 6 months of age are not included in these figures as they graze free of charge with other animals. Only the numbers under paid permits are reported.

² Includes grazing under free-use permits. In the Grazing Districts, the grazing reported is the authorized maximum use which may exceed actual grazing.

Data supplied by administering agencies.

has decreased. In the Western range area,¹³ about 25 million acres of the land used for grazing in 1935 have been withdrawn for forest and watershed development, and for park and recreational, wildlife, military, and other special uses. These withdrawals have been partially offset by additions of about 16 million acres of range land through submarginal land retirement and other purchase programs, abandonments of homestead entries, and other means.

GRAZING FEES AND RENTALS ON FEDERAL LAND

Grazing fees and acreage rentals collected for the use of Federal land in 1949 varied greatly among administering agencies. On an acreage basis, returns ranged from less than 1 cent an acre for Taylor Grazing District land to 5 to 6 dollars, or more, an acre for improved grassland in military and other holdings leased out under competitive bids. On the basis of the number of animals grazed under permits, the fees varied from 8 cents per animal-unit month, including 2 cents for range maintenance in Taylor Grazing Districts to 11 cents a month per head for sheep and 49 cents a month per head for cattle on national forest range. For all Federal land under authorized use for grazing, receipts averaged 2.8 cents per acre and 22.8 cents per animal-unit month of grazing (table 9).

Although grazing fees and rentals on Federal land partially reflect changes in rental rates on comparable private range in 1949, they were far below competitive rates. On the basis of comparison of grazing fees charged by the principal Federal land-administering agencies and competitive rates on privately owned land, the average fee for all Federal land appeared to be only about one-fifth of the rate paid for comparable private range.¹⁴ The fees on national forest range were reported to be less than half the competitive rate (24, p. 6). The fees in Taylor Grazing Districts were about one-sixth as high as those charged for national forest range.

Fees and rentals charged for Federal range land necessarily are adjusted in accordance with quality of grazing, availability of stock water, accessibility, limitations as to use, and other factors which affect the grazing of separate allotments. A good deal of the Federal range is not readily accessible to commensurate land and many large areas cannot be used efficiently due to lack of physical improvements. It has been estimated that 20,000 miles of stock driveways, 100,000 miles of new fences, 15,000 wells, 150,000 spring developments, 250,000 livestock watering reservoirs, and many other miscellaneous improvements are needed to facilitate efficient use of Federal range land (14, p. 572). This extensive need for physical improvements is reflected in low rentals and grazing fees. Discounts from the competitive rate for comparable private range also might result from such factors as limitations concerning numbers and kinds of livestock grazed and seasons of use, requirements with reference to deferred and rotation grazing and the handling of livestock, and require

¹³ Includes the 11 Western States and portions of the Plains States. For 1935 data, see *THE WESTERN RANGE*, Ch. III (27).

¹⁴ The comparability is only approximate. The adjacent and intermingled privately owned range, although competitive, is not strictly comparable with the Federal range. The land-disposal process is a selective one and the better-watered, more accessible, and more productive lands have almost invariably gone into private ownership. Even with careful on-site selection, it is difficult to get comparisons of Federal range with fully comparable private range.

TABLE 9.—*Revenues from grazing leases and permits on Federal land, continental United States, 1949*

Agency	Area grazed	Animal- unit months of grazing	Revenues from grazing		
			Total	Average per acre	Fee per animal- unit month
	1,000 <i>acres</i>	1,000 <i>units</i>	1,000 <i>dollars</i>	<i>Cents</i>	<i>Cents</i>
Bureau of Land Management..	157.3	15,904	¹ 1,246	0.8	² 8.0
Forest Service.....	73.9	8,070	³ 3,385	4.6	⁴ 49.0
Soil Conservation Service.....	6.4	1,707	⁵ 670	10.5	39.3
Other agencies.....	52.4	10,420	⁶ 2,803	5.3	26.9
Total.....	290.0	36,101	8,104	2.8	22.4

¹ Annual Report of the Director of Bureau of Land Management, 1949, Stat. Suppl., p. 97 (20).

² A flat fee of 8.0 cents, including 2.0 cents for maintenance is charged in Taylor Grazing Districts. The computed average including section 15 land is 14.1 cents.

³ Annual Report of Chief of Forest Service, 1950, p. 41 (25).

⁴ The 1949 grazing fees were 49 cents a month per head for cattle and 11 cents a month per head for sheep for stock grazed under paid permits. The computed average was 44.8 cents per animal-unit month, including stock grazed under free permits.

⁵ Annual Report of Chief of Soil Conservation Service, 1950, p. 53 (29).

⁶ Estimated for some agencies on the basis of 1947 data as reported in National Resources Activity of the Federal Government, The Library of Congress, Legislative Reference Service, Public Affairs Bulletin No. 76, January 1950 (9).

ments relative to supplemental feeding or removal of livestock in the event of drought or other conditions resulting in below-normal grazing capacity.

TREND IN GRAZING CAPACITY OF FEDERAL RANGE LAND

As pointed out, it has been estimated that the present grazing capacity of the Federal range land is less than half of its original capacity. This decline has been attributed largely to overgrazing and inadequate maintenance. Although management of the Federal range has been greatly improved during recent years, available information does not show whether stocking rates have been fully adjusted to grazing capacity or whether the downward trend in grazing capacity has been fully checked.

In a 1935 survey of the western range, the grazing capacity, stocking rates, and degree of depletion from the virgin range condition were estimated by range types for 287 million acres of range land in Federal ownership. The grazing capacity of the Federal range at that time was estimated at roughly 30 million animal-unit months, but the land was grazed to the extent of about 42 million animal-unit months.

In 1949, roughly 34 million animal-unit months of grazing were supplied by Federal range in the area covered by the western range survey. This rate of stocking was nearly 20 percent below 1935, but it was about 13 percent above the grazing capacity estimated in the 1935 survey.

However, between 1935 and 1949 significant changes occurred in both acreage of Federal land used for grazing and condition or carrying capacity of Federal range. The acreage of Federal land used for grazing was reduced by about 9 million acres but the quality of much of the range was improved.

From 1935 to 1949, roughly 25 million acres of Federal range were disposed of, or transferred to other uses and closed to grazing. About 16 million acres were acquired by purchase or other means. Land transferred to other uses and closed to grazing included: (1) Land withdrawn from grazing temporarily to promote the natural reseeding of desirable species of forage and to facilitate the control of noxious plants and rodents; (2) land closed to grazing at least temporarily in order to increase protection of soils and watersheds, production of timber, protection of wildlife and other values; and (3) land taken over for military use as bombing and artillery ranges and maneuver areas. Most of this was low-grade land, or land so badly depleted that it provided a minimum of forage.

Range land acquired by the Federal government from 1935 to 1949 consisted chiefly of land that had been in private ownership for farming and grazing uses. Major acquisitions included: (1) Scattered farm and ranch holdings and tax-reverted tracts within the boundaries of national forests, parks, wildlife refuges, and Indian reservations and (2) areas within the land-use adjustment projects set up under NIRA title II of the National Industrial Recovery Act (1933), the Emergency Relief Act (1935) and title III of the Bankhead-Jones Farm Tenant Act (1937). Much of the land in land-use adjustment projects has been reseeded to grasses and now has a relatively high grazing capacity. This is particularly true of title III land in the land utilization projects now administered by the Soil Conservation Service.

Specific data relating to present condition or current carrying capacity of Federal land now used for grazing are not available. It is reasonably clear from reports of administering agencies that since 1935, the carrying capacity of some of the Federal range has been increased substantially by such measures as reseeding, control of noxious plants and rodents, regulation of numbers and kinds of livestock grazed, deferred and rotation grazing, better methods of handling livestock on the range, and construction of physical improvements. It is also apparent that most of the deterioration of the range has been eliminated in areas in which organized management is provided and authorized grazing is adjusted annually and seasonally to estimated grazing capacity. However, reports of the administering agencies indicate that some of the Federal range is still overgrazed and still deteriorating as a result of misuse. Most of the reported overgrazing in areas now under organized management is attributed to poor distribution of livestock on the range,—which results from an inadequacy of watering places, fences, stock driveways, and other physical improvements—rather than to general overstocking of the range. Overstocking may be a major cause of the continuing deterioration of Federal range not under organized management.

In some instances, the available forage on Federal land is not fully utilized. A wide variety of factors contribute to this situation. Some grassland areas are inaccessible, or they lack watering places and other improvements essential to grazing use. In some areas open to grazing,

below-capacity use in terms of available forage is required in order to protect the range until additional watering places, fences, stock driveways, and other needed improvements can be made. In some areas the grazing use of Federal range is only partially maximized in order to increase soil and watershed protection, timber production, wildlife protection, and other values. As indicated above, about 25 million acres of the Federal land used for grazing in 1935 had been sold or transferred to other uses and closed to grazing in 1949. This included a considerable acreage that was closed to grazing at least temporarily for watershed protection. In continental United States, and particularly in the West, roughly 11.5 million acres of Federal land now are used primarily for reservoirs and water supply and about 240 million acres of Federal land have important secondary value for watershed protection, including maintenance of stable water supplies for irrigation, municipal, and industrial uses. Increased use of available forage in watershed-protection areas can probably be permitted when vegetative cover is re-established.

When allowance is made for these situations, it appears that with certain improvements in facilities and management, the Federal range taken as a whole is capable of supporting the number of livestock now grazed on the land. Possibly additional areas should be closed to grazing to protect watersheds, wildlife, and other values. Possibly in additional areas grazing should be excluded or reduced until vegetative cover can be re-established and needed physical improvements can be made. But in some areas more livestock could be grazed if additional watering places, fences, stock driveways, and other physical improvements were provided. The potential grazing capacity of unused and underutilized areas is perhaps equal on the whole to the amount of overgrazing in uncontrolled and poorly managed areas.

If this is true, an intensified range-improvement program should be reflected soon in a general upward trend in the grazing capacity of the Federal range.

POSSIBILITIES FOR IMPROVING FEDERAL RANGE LAND

Although specific possibilities for improving Federal range land were not explored in this land-use inventory, the results of many studies of the western range are generally applicable to Federal land. Several of the reports of these studies indicate that large areas of former and potential grassland can be restored and developed at reasonable cost by improvements in systems of management, reseeding, control of noxious plants and rodents, and by construction of fences, water developments, soil and moisture conservation aids, and other physical improvements.

It is estimated that more than 600 million acres of private and public western range land (including Federal land) need improvement and that nearly 400 million acres of this land need major restoration (*14, p. 570*). During recent years about 8 million acres of depleted range have been successfully reseeded. An additional 80 million acres, or one-fifth of the land needing major restoration, are so badly depleted that they may have to be reseeded artificially if they are to recover in this generation (*12, p. 227*). Of this 80 million acres, an estimated 10 million can be reseeded successfully at reasonable cost if proved procedures are followed. However, proved procedures cannot be outlined for reseeding the remaining 70 million acres until careful tests are made and observed during several years (*24, p. 14*).

RESEEDING.—Available information indicates that it would be feasible to reseed several million acres of Federal range. In the national forests, about 270,000 acres of range have been reseeded, and the Forest Service has estimated that an additional 4 million acres could be reseeded successfully at reasonable cost. The reseeding of this land would provide an estimated $2\frac{1}{2}$ million additional animal-unit months of grazing (24, p. 47). Land administered by the Bureau of Land Management includes 22 million acres in need of reseeding and brush removal, much of which could well be reseeded at current costs (22, 1950, p. 243).

Experiments have demonstrated that reseeded range support more livestock for longer periods, in better condition, and at lower cost, than comparable unseeded ranges. Many experimental plantings of range land in the West have been grazed from 10 to 15 years and still produce from 2 or 3 to as much as 20 times more forage than before seeding. The cost of most of this reseeding at the time it was done was less than \$5 an acre, and the direct value of the increased forage provided has varied from 15 to 50 cents an acre per year. In addition, many indirect values, such as soil and watershed protection, better balance of the year's forage supply, and more efficient livestock production are realized (12, p. 233).

Perhaps the greatest opportunity for improvement in the grazing capacity of Federal range is in higher-rainfall areas on land which now produces considerable quantities of forage. In many such areas, stands of the more desirable native grasses have been killed out or greatly reduced through misuse, with the result that the less desirable species of grass or other forage now predominate. Moreover, new and improved varieties of grasses have been developed for many range and pasture areas. Possibilities are particularly good for reseeding depleted pastures and abandoned croplands on acquired holdings in military, watershed protection, title III, and flood-control areas. Much of this land has been used for crops and would have a high grazing capacity if seeded to permanent pasture. This may also be true of some abandoned agricultural entries and scattered remnants of public domain in marginal farming areas. In addition to a relatively high potential production capacity, a good deal of this land is easily accessible to prospective users. If properly improved, it could yield returns that would approximate the rentals on fair-to-good range that is privately owned.

BRUSH AND WEED CONTROL.—Control of undesirable plants is a prerequisite to improvement of forage cover on much Federal range. Excessive stands of undesirable plants are now established on perhaps half of the western range, including Federal holdings. Mesquite, sagebrush, juniper, shinnery oak, blackjack, and other large plants obstruct grazing in extensive areas. In Texas, for example, more than 150 million acres are infested with woody plants that compete with grasses, obstruct grazing, and provide only a minimum of browse.¹⁵ The grazing capacity of much of the range land is lowered by cheatgrass, snakeweed, and other poor forage plants. Infestations of poisonous plants, such as larkspur, orange sneezeweed, and bitterweed have forced abandonment of thousands of acres of range in localized areas. In Idaho, Nevada, and Utah, for example, a recent infestation of the poisonous plant, *Halogeton glomeratus*, threatens to force modification of use for grazing of an estimated 20 million acres of public domain.¹⁶

¹⁵ Information supplied by the Soil Conservation Service.

¹⁶ Information supplied by the Bureau of Land Management.

Inexpensive methods of killing mesquite have been developed, and experiments indicate that within a few years after killing the mesquite several times as much forage is available as before treatment. Even in areas in which potential production of the range is low, experimental control of mesquite more than doubled forage production, in addition to improving the condition of the soil surface and reducing erosion. Indications are that initial costs of extensive control measures could be repaid by cattle gains within 10 years (13, p. 257).

In experiments at the Southern Great Plains Experiment Station, Woodward, Okla., satisfactory results in control of sand sagebrush, skunk-bush sumac, sand plum, and many range weeds, were obtained with 2,4-D sprayed from airplanes. In experiments on sand sagebrush, for example, 80 percent of the sagebrush plants were completely eradicated. The vigor of remaining plants was greatly reduced. Per-acre yields of beef were nearly twice as great on ranges sprayed as on similar untreated ranges. Since the initial demonstrations, commercial air services have provided planes and chemicals to landowners in the Woodward area for \$2 to \$4 per acre.¹⁷

Experiments indicate that control and removal of big sagebrush also is feasible in many areas. In southern Idaho, for example, burning to remove sagebrush at a cost of 19 cents an acre, where reseeding to perennial grasses was unnecessary afterward, doubled the grazing capacity. Plowing to eradicate sagebrush in southern Idaho and Utah, at a cost of \$1.30 to \$5.00 an acre, followed by reseeding, increased grazing capacity from 9 to 12 times. On this basis, initial costs were repaid in 7 to 10 years (13, p. 257).

SOIL AND WATER CONSERVATION NEEDS

Conservation of soil and water must receive greater attention than they now receive in administration of Federal rural land if land and water resources are to be restored and maintained in a high state of usefulness. Scarcity of water is a basic limiting factor in further economic development of the Western States, and Federal land is a primary source of the water supply. The mountains and foothills in the national forests embrace the headwaters that furnish an estimated 85 percent of the flow of major western rivers and streams used for irrigation, for water power, and for industrial and domestic purposes (24, p. 1). Land administered by the Bureau of Land Management provides an additional 12 percent of the usable water supply (22, 1950, p. 242). Federal land in the West is also a primary source of damaging silt deposits in reservoirs and downstream valley areas.

Experiments and range-cover evaluations made by the Forest Service, the Soil Conservation Service, and other groups, show that the kind, as well as the density of cover is important in soil and watershed protection. The superior forage plants provide more efficient protection than those characteristic of ranges in poor condition (29, 1950, p. 38). Thus, improvement in quality and quantity of range forage is a vital part of soil and water conservation programs and river-basin developments.

¹⁷ Relatively little federally owned land is infested with sand sagebrush; however, results of the Woodward experiments are applicable to large acreages of State-owned land.

Relatively slow progress is now being made toward range and watershed rehabilitation on Federal land because of the financial resources available in relation to the needs for such work. This is indicated by the fact that, in 1949, the Bureau of Land Management, the Forest Service, and the Soil Conservation Service, which together administer about five-sixths of the Federal range land, reseeded only 163,075 acres¹⁸ of the several million acres that could be reseeded at reasonable cost. Only 67,000 acres were reseeded in the national forests, where an estimated 4,000,000 acres could be reseeded under proved methods at reasonable costs. The Bureau of Land Management reseeded only 46,039 acres of the several million acres that it considers suitable for reseeding at current costs.

Progress also is slow on other phases of the work. Land administered by the Bureau of Land Management in 1950 included 156 million acres in need of erosion control. Erosion is severe to critical on 95 million acres of this total, and moderate on most of the remainder. Although it contributes about 5 percent of the annual flow in the area, this land produces an estimated 400 million tons of silt annually, which adds greatly to flood damages. Up to 1949 only 17 million acres of this land had received some conservation treatment. An additional 33 million acres are included in areas approved for conservation treatment, but they are still untreated. The remaining 106 million acres in need of conservation treatment are not included in conservation-treatment areas (22, 1950, p. 242).

COSTS AND BENEFITS OF RANGE IMPROVEMENTS

The extent to which Federal range land would repay the costs of restoration and improvement depends in large part upon the fees and rentals charged for grazing, the use or disposition of the revenues derived from grazing, and the allocation of costs and benefits among the various multiple uses of the land. Although fees and rentals for grazing Federal land are relatively low in terms of the feed-units supplied, revenues from grazing in some areas are substantial. In 1949, aggregate receipts from grazing were approximately 8 million dollars. Some of these receipts were appropriated by the Congress for range improvements. Except for a fee of 2 cents per animal-unit month in Taylor Grazing Districts, however, grazing receipts were not reserved specifically to maintain and improve the basic range resources.¹⁹ Moreover, in much of the range area, watershed protection, timber production, and park, recreational, military, and other special uses are given higher priority than grazing in multiple-use management of the land. If these uses contributed their proportional share toward the cost of an over-all development program, and the receipts from grazing for a 10- to 15-year period were applied

¹⁸ From annual reports of the respective agencies, as follows: Forest Service, 67,000 acres; Soil Conservation Service (Title III), 50,036 acres; and Bureau of Land Management, 46,039 acres.

¹⁹ In other instances, funds for range improvements must be appropriated specifically by the Congress. For years, up to 20 percent of the grazing receipts on many national forests have been appropriated for range improvements. Public Law 478, enacted in 1950, provides that the grazing receipts from national forests, in the amount of 2 cents per animal month for sheep and 10 cents per animal month for other kinds of livestock, may be used for construction of range improvements when appropriated by the Congress. For the fiscal year 1951 the Congress appropriated \$700,000 under this act.

largely toward improvements in amount and quality of forage, reasonable fees and rentals for grazing with provision for annual allocation for maintenance would support more intensive use of the range in areas best suited to grazing.

Detailed land-use and cost-benefit appraisals would be required to ascertain the contributions that nonagricultural uses of the Federal land might make toward protection of soils and watersheds. Public values attributable to these uses of the land have not yet been fully appraised. However, localized studies indicate that they greatly exceed the agricultural values. In Colorado, for example, the value of the annual water crop from some 20 million acres of water-producing land has been estimated to exceed 50 million dollars, or \$2.50 an acre (16, p. 13). The value of the water produced on the eastern slopes of Roosevelt National Forest in Colorado was estimated at \$3.00 an acre for irrigation (4, p. 216). In a similar survey, the city of Los Angeles valued its supply of Colorado River water at \$100.00 per acre foot (before the war and before the recent rapid increase in its population) (16, p. 14). In computing the value of water for domestic purposes, practically no ceiling exists except alternative sources.

If such values were fully considered in cost-benefit appraisals, substantial expenditures for development and maintenance of Federal land could be justified. Under this procedure, net returns from grazing would apply mainly toward improvement of the kinds and quantities of forage in areas used for grazing. They would be only one among other contributions toward the total cost of providing soil and watershed protection in those areas in which grazing is a secondary or incidental use.

Localized studies, such as those made in connection with river-basin developments, would be needed to determine the economic feasibility of an extensive program to improve the Federal range land. From available information, it is clear that in many areas Federal range land produced a good deal less than half its potential capacity. It is reasonably clear also that, if costs were not a limiting factor, the grazing capacity of much of this land could be doubled within 4 or 5 years. However, current costs of range-improvement work are high, and it is not clear to what extent prospective needs for increased production of meat and other considerations would justify an accelerated short-term range-improvement program at this time. A long-term program, along the lines of the 15-year program planned for national forests, might be more feasible (25, 1950, p. 41).²⁰

A program designed to restore approximately the original grazing capacity of the Federal range would probably involve: (1) Reseeding 8 to

²⁰ The Anderson-Mansfield Act (approved Oct. 11, 1949) authorized the reseedling of national forest range land under administration or control of the Forest Service of the Department of Agriculture on a graduated scale for the first 5 years, increasing from \$1,500,000 in fiscal year 1951 to a maximum of \$3,000,000 in 1955, with a like amount for each subsequent year through 1965, and thereafter such amounts as may be needed for range revegetation. For the fiscal year ending June 30, 1951, the Congress did not appropriate the full amount authorized for the first year of the contemplated 15-year program.

In addition to the reseedling of 4,000,000 acres of range land, the planned 15-year range-improvement program of the Forest Service includes construction of 1,500 corrals and 30,000 miles of range fences, 23,000 range water developments, 9,500 miles of stock driveways, control of poisonous and noxious plants on 430,000 acres, and control of rodents on 15,000,000 acres.

10 million acres of depleted land now largely unproductive; (2) control of noxious plants with selective reseeding to speed up restoration of 40 to 50 million acres now being slowly improved by deferred and rotation grazing, with exclusion of livestock from critical areas; (3) brush removal and reseeding for 18 to 20 million acres now producing limited browse; and (4) control of insects and rodents on several million acres.²¹ In addition, development of 20,000 miles of stock driveways, 100,000 miles of new fences, 400,000 to 500,000 springs, wells, and watering reservoirs, and many other physical improvements would be needed to facilitate efficient use of the land (14, p. 572).

The public value of a program that would about double the grazing capacity of the Federal range might be appraised in a number of ways. At average rates charged for grazing privileges on Federal land in 1949 full utilization of the increased capacity would yield annual returns of about 8 to 10 million dollars. At competitive 1949 rates for comparable private range, the increased annual production of forage would be worth 35 to 40 million dollars. The additional feed-units provided annually would be sufficient to produce nearly a billion pounds of beef cattle, which at 1949 prices would be worth possibly 200 million dollars to farm and ranch operators. Additional values attributable to protection of soils and watersheds and to other uses of the land would depend largely upon the place of range-improvement work on Federal land in accompanying resource-development programs.

STATE-OWNED LAND

INTRODUCTION

At some time in their history, all the States held titles to large acreages within their respective boundaries. The 13 original States and Texas took title to all land within their boundaries that had not already passed into private ownership under prior governments. As the country acquired territory by purchase and treaty, this land became the property of the Federal Government. At one time three-fourths of the entire United States was in Federal ownership. Twenty-nine of the 48 States were created from the public domain. In the disposition of the public domain, however, the Federal Government made large grants of land and scrip exchangeable for land to State governments to promote settlement and to encourage development of educational and other institutions, transportation and communication facilities, and land improvements and reclamations.²² Some of the original States also obtained title under English land grants, later confirmed by the Federal Government, to large areas of public domain. As pointed out above, 223.8 million acres of public domain were granted to the States and 8.2 million acres were reserved to satisfy State claims under English grants (tabulation, p. 5).

Some States have retained title to a large part of their State grant land. In addition, all of the States have bought land for specific public purposes. Some also have acquired land through tax foreclosures.

²¹ These are rough approximations based on data cited above.

²² Hereafter, this land is referred to as State grant land. Land set aside by the State of Texas, to be used for the benefit of Texas schools, also is referred to as State grant land.

AMOUNT AND MAJOR SOURCES OF STATE LAND HOLDINGS

In 1950, exclusive of road rights-of-way, stream channels, and water areas, 80.3 million acres of rural land were in State ownership.²³ This was 17.6 percent as much land as was held by the Federal Government in continental United States.

About two-thirds of the land owned by the States in 1950 was acquired through State grants, including school grants made by Texas. The 20 States that still maintain separate reports on their grant-land holdings had 54.9 million acres of State grant land. Some additional States reported that remnants of their grant land are now administered in State forests, parks, and other reservations.

Data as to sources of the remainder of State land holdings are incomplete. However, available data show that much of the remainder was acquired through tax foreclosures. In a number of States tax laws require appraisal and use-capability classification of tax-forfeited land. If tax-forfeited land is found to be better suited to public than to private uses, it may be held permanently in public ownership for forest, park, recreational, wildlife, and other specific public uses.

For example, in the Lake States (Michigan, Minnesota, and Wisconsin), about 17.5 million acres of cut-over land have been reverted for taxes. Of this total, 13.4 million acres are held in State and county ownership. About 7.5 million acres are held under specific designation for permanent use in forests, parks, wildlife preserves, and other reservations. The remaining 5.9 million acres are held without specific use-designation but the bulk of these holdings are subject to sale under rural zoning regulations or legislation that requires use-capability classification (3, pp. 9, 17, and 23).

PURPOSES OF STATE OWNERSHIP

In 1950, 22.4 million acres, or 27.9 percent of all the land in State ownership, were held under specific use-designations. Of this total, 21.1 million acres were designated for primary use as forests, parks, and fish and game refuges. About 1.1 million acres were owned by State institutions, such as colleges and universities, hospitals and asylums, and penal and correctional institutions. The remaining 0.2 million acres were held for miscellaneous uses, such as National Guard camps and rifle ranges, airports, radio stations, fair grounds, flood-control reservoirs, and watershed-protection areas (table 10).

In many States, forest, park, and fish and game lands were administered by a single agency. Considerable emphasis apparently was placed on multiple-use management. Both in these and in other States, however, multiple use of land held for any specified public use was limited largely to other public uses, either as a matter of administrative policy or by State law. In 1950, few instances were found in which such land was leased for farming and grazing, or other private enterprises.

The remaining 57.9 million acres, or 72.1 percent of the State land, were held without specific use designation. This included 54.9 million acres of State grant land, much of which was income-producing land, and 3.0 million acres of other land, largely tax-forfeited. The leasing of State land for farming and grazing was limited almost entirely to these holdings.

²³ See table 23 for statistics by States.

PRIMARY USES OF STATE-OWNED LAND

In their published reports, State agencies do not ordinarily account for all uses of State-owned land. Most of them report the acreage owned for specific purposes, or the primary use-designations, and make only casual reference to multiple uses. In response to a special inquiry, however, most agencies that administer State-owned land supplied statistics on acreage used for farming and grazing. Some also supplied data on forestry management of land held primarily for nonforest uses. But with these exceptions, the data on multiple uses are incomplete. It was reasonably clear from published reports and correspondence that much State-owned forest land was used for recreation, wildlife reserves, and watershed protection. Similarly, production of timber was important on much park, fish and game, and institutional land. Some State grant and tax-forfeited land which had no specified use-designation also was used simultaneously for two or more purposes.

As mentioned earlier, 22,403,320 acres of State-owned land were held for specified public uses in 1950. The only uses reported for 21,876,588 acres of this total were the specified uses for which the land was held. The remaining 526,732 acres included 182,257 acres used for farming, 202,866 acres used for grazing, and 141,609 acres under forestry management. Of land used for farming and grazing, 346,882 acres, or 90.0 percent, were institutional holdings, including prison, hospital, and college farms. Land under forestry management included 85,095 acres of institutional land, largely experimental forests maintained by colleges and universities.

Of the 57,943,952 acres of State-owned land that have no specified public-use designation, 46,105,826 acres were leased for agricultural use and 3,544,660 acres were reported under forestry management. Uses, if any, were not reported for the remaining 8,293,466 acres, which included 6,355,072 acres of State grant land and 1,938,394 acres of tax-forfeited and other land. Some of this land probably had little value except for wildlife and watershed protection, but much of it was in scattered holdings which had not been brought under effective administration. A large part of the land for which no authorized use was reported may have been used in trespass for grazing.

FORESTRY

Forestry was the primary use for 17,707,829 acres of the State-owned land in 1950 (table 11). This included 14,021,560 acres in established State forests (table 12) and 141,609 acres in institutional, fish and game, and other public land-use areas. The remaining 3,544,660 acres were State-grant, tax-forfeited, and other land under forestry management.

There were established State forests in 40 States. Acreages in State forests were relatively small, however, except in Michigan, Minnesota, New York, and Pennsylvania. These four States contained 10.3 million acres, or nearly three-fourths of the land in established State forests. Only 12 other States reported as much as 100,000 acres of State-owned land in established State forests. In 9 States, 10,000 acres or less were specifically reserved for State forests. These small holdings consisted largely of forest nursery and experimental plots.

States that maintained established forests reported practically no authorized uses of State forest land for agricultural purposes. The reports

TABLE 10.—*State-owned land: Purpose of ownership by geographic divisions, 1949*

Geographic divisions ¹	Land held for specific public uses						Land without use designation ⁷	Total State-owned
	Forests ²	Parks ³	Wildlife reserves ⁴	Institutional sites ⁵	Miscellaneous other uses ⁶	Total		
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
North:								
Northeast.....	5,191	638	1,001	76	9	6,915	.....	6,915
Lake States.....	5,916	244	1,952	100	1	8,213	2,228	10,441
Corn Belt.....	370	211	151	140	.....	872	13	885
Northern Plains.....	23	115	7	38	1	184	5,880	6,064
Total.....	11,500	1,208	3,111	354	11	16,184	8,121	24,305
South:								
Appalachian.....	299	169	278	207	13	966	.....	966
Southeast.....	305	157	92	178	138	870	1,626	2,496
Delta.....	32	39	340	71	.....	482	350	832
Southern Plains.....	6	105	217	63	.....	391	4,059	4,450
Total.....	642	470	927	519	151	2,709	6,035	8,744

TABLE 11.—*Major uses of State-owned land, 1950*

Major land uses ¹	Acreage	Percentage	
		State holdings	Land area
	<i>Acres</i>	<i>Percent</i>	<i>Percent</i>
Public uses:			
Forestry.....	17,707,829	22.0	0.9
Park and recreational.....	2,367,730	3.0	.1
Fish and game reserves.....	4,747,291	5.9	.3
Institutional sites.....	632,990	.8	(²)
Miscellaneous.....	107,017	.1	(²)
Total.....	25,562,857	31.8	1.3
Agricultural uses:			
Grazing.....	2,412,154	3.0	.1
Farming.....	44,078,795	54.9	2.3
Total.....	46,490,949	57.9	2.4
All other land.....	8,293,466	10.3	.5
Total State-owned.....	80,347,272	100.0	4.2

¹ In response to a special inquiry, agricultural uses were reported for all classes of State-owned land. For the purposes of this report use of the land for farming or grazing was considered to be the primary use, temporarily, even though the land is to be developed for forest, park, or other specific public use.

² Less than one-tenth of 1 percent.

Compiled by Bureau of Agricultural Economics from data supplied by State agencies.

contained some references to grazing under free permits or in trespass. None of the States reported State-owned forest land leased out for grazing and only 128 acres in established forests were reported under lease for farming.

PARK AND RECREATIONAL USES

In 1950, 2,384,597 acres of State-owned land were reserved for permanent use in State parks. Park and recreational uses were the only uses reported for 2,367,730 acres of this total (table 13). The remaining 16,867 acres were used for agricultural purposes—887 acres for farming, and 15,980 for grazing. Only three States reported State park land leased for farming and two reported park land leased for grazing.

State parks were maintained by all States except Colorado. The number of State parks ranged from 2 in Arizona to 570 in Texas. In each of 12 States, more than 100 separate State park units were in operation or in process of development. There were a total of nearly 3,400 State park developments on State-owned land. A number of State park and recreational developments on Federal land were held under cooperative arrangements or long-term leases.

In some States, such as New York, Minnesota, and California, State parks were under forestry management, except for the developed recrea-

tional areas, and selective timber cutting was permitted. In the developed areas, recreational uses were generally exclusive except for incidental protection of watersheds and wildlife.

FISH AND GAME RESERVES

In 1950, 4,760,870 acres of State-owned land were designated for use in fish and game reserves. The propagation and protection of fish and game were the only reported uses for 4,747,291 acres of this land (table 13). For the remaining 13,579 acres, reported uses were farming 6,065 acres, grazing 1,000 acres, and forestry 6,514 acres.

Fish and game reserves were maintained on State-owned land in 42 States. In addition, many State fish and game reserves were established under long-term leases and cooperative arrangements on land owned by

TABLE 12.—*Forest land in State ownership, by geographic divisions, 1950*

Geographic division ¹	Area in organized forests ²	Area under forestry manage- ment ³	Com- mercial forest ⁴	Noncom- mercial forest ⁴	Total forest land ⁴
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
North:					
Northeast.....	5,191	5,197	3,672	2,590	6,262
Lake States.....	5,916	6,661	7,810	1,408	9,218
Corn Belt.....	370	391	276	133	409
Northern Plains....	23	23	8	92	100
Total.....	11,500	12,272	11,766	4,223	15,989
South:					
Appalachian.....	299	304	696	66	762
Southeast.....	305	925	656	360	1,016
Delta.....	32	402	771	35	806
Southern Plains....	6	18	37	218	255
Total.....	642	1,649	2,160	679	2,839
West:					
Mountain.....	523	2,328	1,801	3,753	5,554
Pacific.....	1,357	1,459	2,183	878	3,061
Total.....	1,880	3,787	3,984	4,631	8,615
United States Total.....	14,022	17,708	17,910	9,533	27,443

¹ For a list of States comprising each of the geographic divisions see table 24.

² Compiled by Bureau of Agricultural Economics from data supplied by the administering agencies. Does not include land administered by State forestry departments under leases and cooperative arrangements.

³ Includes land owned by State agencies primarily for nonforest uses but managed for forestry production.

⁴ As reported by the United States Forest Service in Basic Forest Statistics, 1945, (23). These classifications are based on forest cover and suitability for forest production without reference to the purposes of ownership and use.

TABLE 13.—*State-owned land used for special public services, by geographical divisions, 1949*¹

Geographic division ²	Parks ³	Fish and game reserves ⁴	Institutional sites ⁵	Miscellaneous uses ⁶	Total
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Northeast.....	638	1,000	43	8	1,689
Lake States.....	244	1,952	83	.....	2,279
Corn Belt.....	210	146	33	.....	389
Appalachian.....	168	278	157	14	617
Southeast.....	158	93	163	78	492
Mississippi Delta.....	40	340	41	.....	421
Southern Plains.....	89	216	41	1	347
Northern Plains.....	115	7	19	.....	141
Mountain.....	42	428	24	.....	494
Pacific.....	664	287	29	6	986
United States Total...	2,368	4,747	633	107	7,855

¹ Does not include land used primarily for farming and grazing. Includes an undetermined acreage of forest and woodland, some of which has commercial value.

² Data for States comprising each of the geographic divisions are given in table 25.

³ Does not include State park and recreational developments on leased land.

⁴ Does not include cooperative reserves on Federal land and State reserves of leased privately owned land.

⁵ These data are incomplete for some States.

⁶ Includes National Guard camps and rifle ranges, fair grounds, airports, radio stations, flood-control areas, and watershed-protection areas.

other public agencies. Also, in about 35 States, wildlife-protection areas were maintained on privately owned land under leases and easements.

Much State-owned fish and game land is under secondary forestry management. Timber cutting is permitted in many States under arrangements designed primarily to protect wildlife habitats, but also to protect timber values and soil and water resources. In many woodland areas, fire protection is provided for wildlife refuges under cooperative arrangements with forestry departments.

INSTITUTIONAL USES

As pointed out above, agricultural uses of land were more important on institutional land than on other State-owned land held under specific use designations. Roughly a third of the rural land owned by State institutions in 1950 was used for farming and grazing in 1949. Of the total of 1,064,967 acres owned by State institutions, approximately 633,000 acres were used as institutional sites (table 13); of the remainder, 173,179 acres were used for farming and 173,703 acres were used for grazing. An additional 85,095 acres were under forestry management, including farm forests. With only a few exceptions, agricultural enterprises on land owned by State institutions were carried on by the institutions.

Farming was particularly important on land owned by State penal and correctional institutions. Many State prisons operated commercial farms. Some correctional institutions also operated commercial farms,

and many operated small-scale farms to provide food products for institutional use.

Farming and grazing operations carried on by colleges and universities were largely experimental and demonstration enterprises. However, 60 percent of the rural land owned by the colleges and universities was used for farming and grazing, and production on much of this land was relatively high.

MISCELLANEOUS SPECIAL USES

In 1950, 171,198 acres of State-owned land were held for a wide variety of miscellaneous special uses. Except for a few small areas, this land was not important for agricultural purposes. Only three States reported land in this category used for agricultural purposes. Chief of these was Florida, where 10,320 acres in a State-owned Indian reservation were used for farming and grazing.

AGRICULTURAL USES

In 1950, farming and grazing were major uses for 46,490,949 acres, or 57.9 percent of the rural land owned by the States (fig. 7). Of this total, 2,412,154 acres were used for farming and 44,078,795 acres were used for grazing (table 14).

FARMING.—State-owned land used for farming included 2,216,646 acres of State-grant land. This was 92 percent of the total State-owned land used for farming. Most of this land was located in the Western States. Roughly 72 percent of the total rural State-owned lands, 94 percent of State-owned lands used for farming, and all State-grant lands used for farming were located in the 17 Western States.

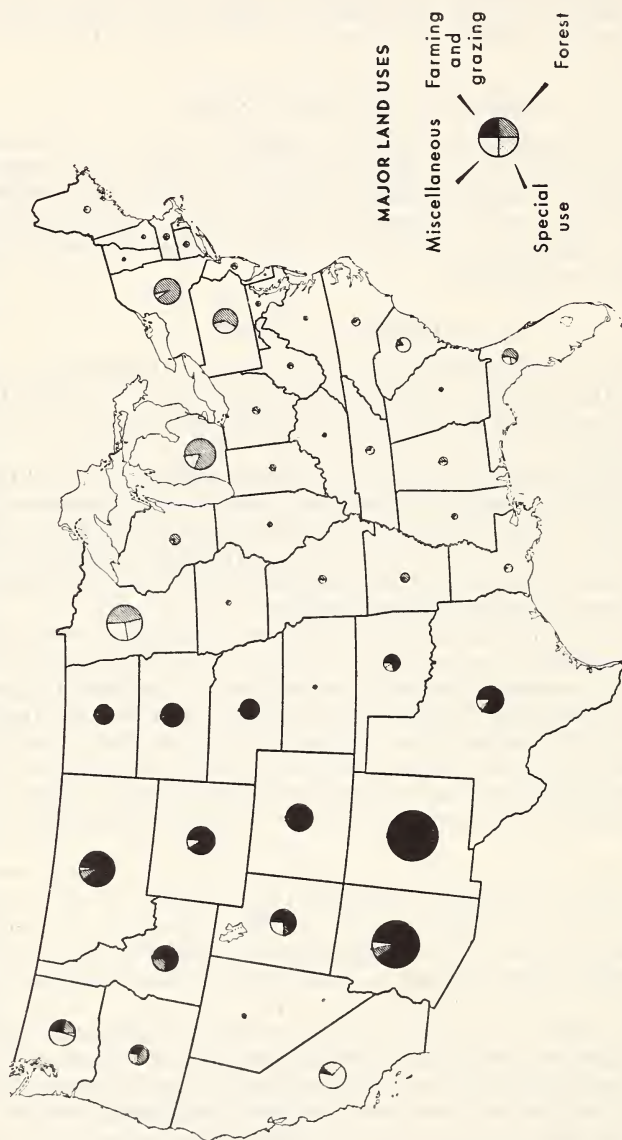
In most instances, only generalized data are available concerning the quality of State-owned land used for farming. Probably much of it is marginal for dry farming. Generally, except for acquired land in special-use areas, land remaining in State ownership is land that has not attracted buyers in grant-land and tax sales. However, in a few States, the State grant-land holdings include some good farm land. In Oklahoma, for example, some State grant land was developed for farming under long-term leases and the farms compare favorably in quality with other farms in the locality.

GRAZING.—As pointed out above, roughly 55 percent of State-owned rural land is used for grazing. Virtually all of this land is western range. Of the 44,078,795 acres used for grazing in 1949, 43,949,918 were located in the 17 Western States. The latter included 43,725,827 acres of State grant land, which is 99.2 percent of the total State-owned land used for grazing.

State-owned range is more widely distributed than is range in Federal ownership. A greater proportion of State-owned range is located in the Plains States and other areas that are marginal for dry farming. Many State holdings are certain numbered sections, particularly sections 16 and 36, which include large acreages of farm land and marginal cropland that are used for grazing. In some States, the State-owned range also includes former low-grade farms that have reverted for ad valorem taxes or have been foreclosed on loans of State land-grant funds.

Chiefly because of these differences, the average stocking rate of State-owned range taken as a whole is slightly higher than that of the Federal

MAJOR USES OF STATE-OWNED LAND, 1950



U. S. DEPARTMENT OF AGRICULTURE

NEG. 48427-HX BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 7.—In 1950, there were 80.3 million acres of rural land in State ownership. The pie charts above, which are drawn in proportion to area, show both the distribution and major uses of the State lands. The Western States have the largest land holdings. In 1949, grazing was the primary use for 44.1 million acres of State land, most of which were in Western States. About 2.4 million acres were used for crop farming and 17.7 million acres were devoted to forest and woodland uses. Parks and institutional sites also were important uses.

TABLE 14.—*State-owned rural land used for farming and grazing, by geographic divisions, 1949*¹

Geographic division ²	Farming	Grazing	Total
	1,000 acres	1,000 acres	1,000 acres
Northeast.....	20.0	7.8	27.8
Lake States.....	25.9	2.4	28.3
Corn Belt.....	66.6	33.9	100.5
Appalachian.....	27.7	16.3	44.0
Southeast.....	10.5	63.4	73.9
Mississippi Delta.....	4.1	5.1	9.2
Southern Plains.....	573.1	3,025.7	3,598.8
Northern Plains.....	203.1	5,657.9	5,861.0
Mountain.....	1,355.4	33,943.5	35,298.9
Pacific.....	125.8	1,322.7	1,448.5
United States.....	2,412.2	44,078.7	46,490.9

¹ Includes land leased out for farming and grazing and land used for institutional farms, experiment stations, wildlife feeding areas, and other uses.

² Data for States comprising each of the geographic divisions are given in table 26.

range taken as a whole. Data for specific analysis of the relationships between stocking rates and grazing capacities on State and Federal range are not available.

RELATIVE IMPORTANCE OF STATE-OWNED RANGE LAND

In 1949, State-owned grazing land supplied an estimated 6,975,622 animal-unit months of grazing. This was roughly one-fifth as much grazing as was supplied by land in Federal ownership. Grazing supplied by State-owned land as a whole amounted to one animal-unit month from 6.32 acres used for grazing. This compares with one animal-unit month of grazing from 8.03 acres of Federal land used for grazing.

Virtually all of the grazing supplied by State-owned land was in the Western States. Of the total animal-unit months of grazing supplied by State-owned land, 99.5 percent was in the 17 Western States, including 67.6 percent in the Mountain States, 21.6 percent in the northern Plains, 8.4 percent in the southern Plains, and 1.9 percent in the Pacific States. The remaining 0.5 percent was divided among the 6 other geographic divisions (table 15).

The quantity of forage supplied by State-owned land is not large relative to total national requirements for forage-consuming livestock. In 1949, 67.2 million animal units of forage-consuming livestock (excluding poultry and hogs) were on farms. They required roughly 805 million animal-unit months of pasture and other forage for year-long maintenance. The country's pastures and ranges supplied about 60 percent of the total roughage (6, p. 51). Thus, State-owned pasture and range land supplied about nine-tenths of 1 percent of the total roughage or 1½ percent of the total pasture.

Nevertheless, forage supplied by State-owned range was of considerable importance in the economy of some areas. In the Mountain States, for example, which contains 77 percent of the State-owned range, forage

TABLE 15.—*Proportion of forage requirement supplied by State-owned range land, United States, by geographic divisions and by States in Northern Plains and Mountain regions, 1949*

Area	Forage requirement ¹	Forage supplied by State land	
		Quantity ²	Proportion of total
	1,000 AUM	1,000 AUM	Percent
Northeast.....	66,180	7	(³)
Lake States.....	96,984	.....	(³)
Corn Belt.....	137,280	24	(³)
Appalachian.....	56,184	1	(³)
Southeast.....	30,492	7	(³)
Mississippi Delta.....	33,456	.....	(³)
Southern Plains.....	110,460	583	0.5
Northern Plains.....	107,784	1,507	1.4
Mountain.....	107,760	4,715	4.4
Pacific.....	59,364	132	.2
United States.....	805,944	6,976	.9
17 Western States.....	385,368	6,936	1.8
11 Western States.....	167,124	4,846	2.9
Northern Plains:			
Kansas.....	34,236	1	(³)
Nebraska.....	35,472	442	1.2
North Dakota.....	15,300	466	3.0
South Dakota.....	24,168	598	2.5
Total.....	4 109,176	1,507	1.4
Mountain States:			
Arizona.....	8,976	880	9.8
Colorado.....	20,712	454	2.2
Idaho.....	12,240	248	2.0
Montana.....	21,348	736	3.4
Nevada.....	6,744	2	(³)
New Mexico.....	13,992	1,609	11.5
Utah.....	9,564	262	2.7
Wyoming.....	14,592	524	3.6
Total.....	4 108,168	4,715	4.4

¹ Computed on the basis of 12 months maintenance for animal units of forage-consuming livestock, excluding poultry and hogs on farms in 1949, as reported by Bureau of Agricultural Economics (18).

² Estimated by BAE from data supplied by the agencies administering State-owned land. Data for States are given in table 27.

³ Less than 0.05 percent.

⁴ Estimates for the separate States include forage consumed by poultry and hogs, which amounts to less than one-tenth of 1 percent of the total in most of the Western States.

supplied by State-owned land amounted to 4.4 percent of the roughage required for year-long maintenance of all range livestock in the region.

In Arizona and New Mexico, State-owned range supplied 9.8 and 11.5 percent, respectively, of the total forage requirement.

Forage supplied by State-owned pasture and range was the equivalent of 581,302 animal-unit years of grazing. If the land were used fully for production of beef cattle and if the cattle gained an average of 300 pounds per animal unit per year, production of cattle would amount to nearly 175 million pounds per year.

The importance of State-owned land in local range-livestock economies varies greatly, but generally it is less than proportional to the area in State ownership. State grant-land holdings, which contain more than 99 percent of State-owned land used for grazing, consist mainly of certain "numbered" sections in each township and are scattered throughout the States. Under some of the special grants, and generally in the case of in-lieu or indemnity land, States were authorized to select land from vacant public domain. Some States selected contiguous sections in good land areas and strategic locations,²⁴ but some made their selections on a random basis by designating alternate section numbers. As a result, most State holdings are widely scattered. In a few States that have tried to dispose of their holdings, farm land and the better grades of range have been sold and the range remaining in State ownership is of poor quality and largely unsalable. In States that have held their land, however, land now used for grazing may include marginal cropland and other land equal in quality to privately owned range. Thus, the average quality of the range land owned by the States may be somewhat poorer than that of the privately owned range, but it is probably better than the vacant and unreserved public domain.

In some instances, use of State-owned range may be highly important to individual farm and ranch operators. In States in which State land was allotted or selected on a random basis and has been held, State holdings include a proportional share of the watering places and other strategically located land, control of which is essential to the use of adjacent land. When specific selections of indemnity land were made, State land may include most of the watering places and other strategic tracts.²⁵ In many areas, use of State land also is important in rounding out efficient operating units. Control of State-owned land may be doubly important in this respect when a larger base of commensurate land is needed to obtain preferences or permits to graze additional livestock on federally owned range.

OPPORTUNITIES FOR IMPROVING STATE-OWNED LAND

Insofar as physical factors alone are concerned, opportunities for improving the agricultural production capacity of State-owned land are perhaps greater than those for improving Federal land. As mentioned

²⁴ In New Mexico, for example, "the selections of lieu and institutional lands were left largely to stockmen who were expected to be the purchasers or lessees of the land. The result was that, with the exception of the grants of specific sections, State land lies in fairly well blocked tracts and is, as a rule, the better land of the State." M. L. UFGURCH and LEON W. HILL, (31).

²⁵ In Idaho, for example, it is reported that "state selections were made on lands strategically located and on important watering places with the idea of controlling large areas of the public range." (5, p. 13)

earlier, it appears that the quality of State-owned land used for farming and grazing is slightly better as a whole than that of the land in Federal ownership and the land is more accessible.

A major problem in the development and proper maintenance of farming and grazing land in State ownership is the difficulty of providing effective administration. Much of the State land used for farming and grazing is in scattered holdings which do not constitute efficient operating or managerial units; hence, it must be used in conjunction with land in private ownership, or with other public land. Most of the land is administered by State land departments which do not have authority to acquire additional land in order to block-in efficient operating and managerial units, or to use receipts from sales of land and rentals for land maintenance and capital improvements.

OWNERSHIP PATTERN A BARRIER TO IMPROVEMENT

Although detailed data relating to ownership patterns of State holdings used for farming and grazing are not available, it is apparent from generalized information that the bulk of this land is in scattered sections. As pointed out above, roughly 95 percent of the State-owned farming and grazing land is range land (table 14) and more than 99 percent of grazing land is grant land. Incomplete data show that most of the grant land is in scattered sections.

For example, in the Mountain States, which contained 77 percent of the State grant land used for grazing in 1949, 52 million acres were in the original State grants (20, table 93). This included 40 million acres in common school grants, which were allotted in scattered sections.²⁶ In 1950, these States still held 38.7 million acres of grant land, of which 32.3 million acres were common school land. Information is not available concerning the remainder, but it is likely that much of it was also in scattered sections and small tracts.²⁷ Thus, it is evident that most of the grant land, which includes virtually all of the State-owned land used for grazing, is in scattered sections and other small tracts.

In much of the Mountain region several sections of range land are required for an efficient operating unit. As State holdings consist mainly of scattered sections, the States rarely have enough contiguous land to make up an independent operating unit. For efficient utilization and management, these scattered holdings must be combined with adjacent land, either to form individual operating units or as community grazing areas.

LACK OF AUTHORITY TO IMPROVE

In most States, the authority of State agencies to develop and maintain agricultural land in State ownership is limited by constitutional or statutory provisions or other circumstances. Reference was made earlier to restrictions on the use of State-owned land in forests, parks, and other special-use areas for farming, grazing, and other private enterprises.

²⁶ In all the Mountain States, sections 16 and 36 were designated as common school land and in Arizona, New Mexico, and Utah additional school grants were made of sections 2 and 32.

²⁷ Some of the Western States have been unable to obtain several million acres of their grant because the land has not yet been surveyed. Also, in many instances, it is impossible to identify the location of the land because of inadequate survey.

In many States, farming and grazing land that is tax-forfeited may either be sold back into private ownership or set aside by classification for specified public uses, but it cannot be maintained, reclaimed, or developed and held in State ownership specifically for agricultural use. Even in the case of State grant land held for agricultural use, some of the administering agencies may authorize or contract for the improvements by adjustments in rental rates, charging the legal minimum and using any surplus above the minimum for improvements, but they are not permitted to use receipts actually collected from the land for land maintenance, or reclamations, and capital improvements. Moreover, they are not permitted to use State trust funds to buy land needed to block in efficient operating and managerial units.

Primary purposes of State land grants were to provide funds for development and operation of schools and other State institutions and for development of roads, drainage reclamations, and other internal improvements. It was contemplated that the land would be sold to owner-operators as a method of providing development capital and setting up trust funds to yield revenues for current operations. Although renting of State-owned land was authorized, it was not planned that rental farms and ranches would be developed and retained in State ownership. Provisions were made for credit sales of the land to persons who would develop it, and for farm-mortgage loans to promote development by owner-operators. But provisions were not made for the administering agencies to use the receipts from land sales and rentals for development, reclamation, or maintenance of land held permanently in State ownership. In some cases, even when State land departments have had farms and ranches developed under long-term rental arrangements, or have taken title to improved land through forfeiture of purchase contracts and foreclosure of farm mortgages, they have not had authority to use receipts from the land for land reclamation or for maintenance of capital improvements.²⁸

Even if State land departments were authorized to use receipts from grant land for land developments, many of them could not so do because State institutions depend upon returns from the land for current operating revenues. In most instances, receipts from grant land now held are not

²⁸ In this regard, the State Land Commissioner of Idaho said:

"Our greatest problem is the foreclosed land received by this Department for administration after foreclosure by the Department of Public Investment of farm loans. Such farms are naturally badly run-down when they come into our hands. Buildings are dilapidated, fences are down, the soil is depleted and frequently the place is badly infested with noxious weeds. A special fund was provided by the last Legislature for combatting noxious weeds, but further than that we are without funds for making any sort of improvements on State-owned lands, foreclosed, or grant. The degenerate condition of such farms is not conducive to securing desirable tenants. Too much time, effort and money are required to bring the soil into productivity again and the house is often in such condition that no self-respecting family would live in it. In times past, the tenant was sometimes allowed to make needed repairs to buildings and fences, etc., and replantings of alfalfa seed, and deduct the amount of actual cash expended for materials from the annual rent paid to the State. However, the law specifically requires that all income from State lands, without any deduction whatever, shall be deposited to the proper funds and accordingly such practices are deemed to be contrary to law and have been abandoned. It is said commonly in rural districts that driving along the highway, one can easily 'spot' the farms owned by the State — they are the ones in the worst shape." [Idaho State Planning Board, Report on the Management of State-Owned Lands (5, Sec. 7)].

of major importance in the budgets of State institutions. In some cases, however, particularly when title to most of the grant land has been held, recipients of the grants depend upon returns from the land for a major portion of their current operating revenues. In such cases, receipts from the land could not be used for land reclamations and improvements without State appropriations or other compensatory provisions for financing the institutions.²⁹

Moreover, apparently few State land departments have workable authority to acquire land by purchase or exchange for the purpose of blocking in efficient farm and ranch units or range-management areas. Buying of additional land may not be specifically prohibited, but funds frequently are not made available for that purpose. State grant-land trust funds cannot be used for land purchases because of Constitutional or other provisions that these funds be invested in bonds, farm mortgages, and other approved types of "safe, interest-bearing securities." Under their Enabling Acts, the States were granted authority to exchange grant land for other land, public or private, under such regulations as the legislature of the State may prescribe: Provided, that such exchanges involving public lands may be made only as authorized by Acts of Congress and regulations thereunder (28).

Some of the States have withheld exchange powers from the State land boards and some have authorized exchanges only for Federal land. Exchanges of reserved Federal land are restricted by Acts of the Congress. The Taylor Grazing Act places certain restrictions on exchanges of unreserved and unappropriated Federal land within Taylor Grazing Districts. This Act provides "that no State shall select public lands in a grazing district in furtherance of any exchange unless the lands offered by the State in such exchange lie within such grazing district and the selected lands lie in a reasonably compact body which is so located as not to interfere with the administration or value of the remaining land in such district for grazing purposes as set forth in this Act" (28).

Thus possibilities for blocking in and developing efficient farming, grazing, or range-management units under State ownership are limited mainly to instances in which State-owned land within Federal reservations or Taylor grazing districts can be exchanged for unreserved and unappropriated Federal land outside the Federal reserves and Taylor grazing districts. Reports of State land commissioners indicate that slow progress has been made in their efforts to exchange land.³⁰

²⁹ For example, in Arizona, the Constitution (Article XI, Sec. 8) provides that "the income derived from the investment of the permanent State school fund, and from the rental derived from school lands, with such other funds as may be provided by law shall be apportioned annually to the various counties of the State in proportion to the number of pupils of school age residing therein." With reference to the sources of school funds, Section 10 provides that "the revenue for the maintenance of the respective State educational institutions shall be derived from the investment of the proceeds of the sale, and from the rental of such lands as have been set aside by the Enabling Act approved June 20, 1910, or other legislative enactment of the United States, for the use and benefit of the respective State educational institutions. In addition to such income the legislature shall make such appropriations, to be met by taxation, as shall insure the proper maintenance of all State educational institutions, and shall make such special appropriations as shall provide for their development and improvement."

³⁰ In Arizona, for example, recent reports of the State Land Commissioner (1) contain repeated references to the unsatisfactory situation with reference to land exchange.

LAND-MANAGEMENT PRACTICES

Lacking means to block in and develop efficient units of farm and ranch land under State ownership, many State land departments have adopted land-management practices designed to encourage the development, and proper use of State land under leases and group-tenure arrangements. Some States have made use-capability classification of their holdings; others have provided for specific land appraisals as a basis for negotiating sales of land and rental arrangements that are conducive to efficient use and maintenance of the land. Some State land departments also have participated in establishment of range-management units and land-use control areas, largely through cooperative arrangements with group-tenure organizations.

SELECTIVE SALES AND PREFERENCE LEASES

Some States have tried to develop comprehensive land-management plans as a basis for improvements in administration of State land. In Idaho, for example, the State Land Department has adopted the policy of basing its land sales and rentals on use-capability classifications and specific analyses of the relationship of State land to adjoining land. Holdings classified as forest, recreational, or watershed land are withheld from sale and brought under appropriate public-use management. Farming and grazing lands are appraised with reference to their basic suitability for private ownership, particular attention being given to relationship of the State land to established farms, ranches, and range-management units.

Applications for purchase or lease are rejected for small tracts from established cattle and sheep ranches, for small tracts from large dry-farming set-ups, and for the more desirable parcels of State-owned land where leasing or sale of remaining tracts might be adversely affected. In some instances, sales of State land that might interfere with proper utilization of Federal land are also refused. Rental rates on agricultural land are based on normal yields and prevailing prices and rentals on range land on actual carrying capacity and the prevailing price of animals pastured on the range. Whenever possible, an entire area of State-owned land is leased to a grazing association, which in turn allots grazing privileges to its members.

As a protection to lessees in the event of sale or contested lease and to promote proper utilization and protection of the land, range-improvement credits are allowed for reseeding, development of watering places, construction of drift fences, and similar improvements. Credits for land and other capital improvements also are allowed on agricultural land. Concerning land improvements, the State Land Commissioner reported that "many State land lessees have expended considerable money and labor in clearing and leveling State farms. Our policy is to actually appraise these improvements and to give the lessees full consideration for the same in the event of sale or a contested lease" (10).

In States in which improvement credits are allowed and the land is subsequently sold or leased to someone else, the purchaser or lessee is required to reimburse the owner of the improvements for their appraised value, as determined by the State Land Commissioner. When the value of the improvements is relatively great, the State may pay for and sell them on installments.

In Arizona, for example, "Whenever State lands on which there are improvements for which the owner thereof is entitled to be compensated, are offered for sale, and the purchaser is not the owner of such improvements, the purchaser shall pay the person conducting such sale, ten percent (10%) of the appraised value of such improvements and the balance thereof within thirty (30) days thereafter; provided, that if, in the judgment of the commissioner, the sum at which said improvements are appraised is so great that competitive bidding for the land will be thereby hindered, the commissioner may sell such improvements on installments payable ten percent (10%) upon the announcement of the successful bidder, fifteen percent (15%) thirty (30) days after, and fifteen percent (15%) annually thereafter for five (5) years, together with six percent (6%) interest on the balance remaining unpaid, said balance until paid, shall be a lien upon the land. . . ."

When improvements are sold on installments the first twenty-five percent (25%) shall, after deducting all rents, penalties and costs owing to the State on account of said land, be paid to the owner of the said improvements, and the balance shall become a legal charge against the State; upon surrendering possession of any such land the owner of the improvements thereof shall file with the State auditor his claim for the balance on said improvements remaining unpaid, and if the said claim bears the commissioner's approval as to its correctness, and a certificate that possession of the said lands and improvements has been surrendered by all persons having lawful claims for improvements on said land, it shall be paid by the State treasurer on the order of the auditor out of any fund in which there is money subject to investment" (2, p. 38).

In some instances, State land departments have adopted policies so favorable to lessees that a lease on State-grant land is the practical equivalent of purchase and rental rates are comparable to *ad valorem* taxes. In New Mexico, for example, farming and grazing leases are made for 5-year periods in order to avoid the legal necessity of advertising for bids. Rental rates are negotiated with allowances for land maintenance and improvement, except that minimum rates are fixed by law at 3 cents an acre for grazing land and 10 cents an acre where any part of a State section is in cultivation. Unleased land is generally leased upon application made in good faith by persons in position to use the land advantageously, but efforts are made to protect existing lessees by giving them preference in renewal of leases and opportunity to meet higher bids for the lease.

Land under agricultural or grazing lease is not offered for sale until expiration of the lease; any offer for sale or lease must be with the written consent of the existing lessee; and possession of the land is not transferred until the lease expires. Leases may be transferred, and they are commonly recognized as negotiable. A transfer fee of \$2.00 is required by the State Land Office, but to obtain a State lease, the former lessee usually must be bought out. Thus, State land is customarily leased and re-leased to the same individual and in connection with the same private property unless the lessee sells or otherwise relinquishes his claim. In this way, operators develop farms and ranches and expect the State land to continue to be an integral part of their organization. As lease rates are comparable to

taxes, and tenure is relatively secure, little or no advantage is to be gained by buying State lands.³¹

GROUP-TENURE ARRANGEMENTS

In most Western States, State land departments provide organized management for some State-owned range not sought by individual lessees through participation in cooperative arrangements with State and Taylor grazing districts, State grazing associations, soil conservation districts, and similar group-tenure organizations.³² Managerial services provided through these arrangements vary greatly but, in general, they provide supervision of use and bring the State land into area conservation and rehabilitation programs. The acreage involved directly in the arrangements is relatively small, primarily because of the strong rental demand for State-owned land among grazing-district members who want to increase their commensurate-property base as a method of obtaining higher grazing allotments on district-controlled range. However, in addition to strengthening rental demand for State-owned land, these group-tenure arrangements tend to reduce or prevent trespass and to provide reasonably efficient centralized management at minimum cost.

Group-tenure organizations vary greatly in their legal status but are similar in their activities. In some States they are largely private cooperative organizations established to promote member interests; in others they are political subdivisions of the State, with responsibility for protecting the public interest. In some instances, their functions are chiefly educational and advisory, but in others they have detailed administrative authority. Ordinarily, grazing associations have only those powers of control inherent in ownership and lease rights. But in some States, they have authority to enact local regulations as to land use which have the force and effect of law. In Montana, for example, grazing associations are given broad supervisory powers under special legislation (8, p. 7).

Although these differences in legal status have necessitated different procedures, they have not resulted in marked differences in the activities and achievements of group-tenure organizations. The basic tenure problem derives from complicated intermingling of Federal, State, county, corporation, and individually owned land. A cooperative association can buy or lease land from a number of different owners, or arrange to manage the land, and thereby establish uniformity of tenure for operating purposes. Even when they have served in an educational or advisory capacity, with neither the controls inherent in ownership and lease rights nor legal supervisory authority, grazing associations have been fairly success-

³¹ Quoted in part and in substance from Administration and Management of Public Land in New Mexico (31). In reference to transfers of grazing leases, Upchurch and Hill stated that "State grazing leases frequently sell for a price comparable to actual purchase prices of similar land. One method of obtaining State leases is to buy out the private ranch property of existing lessees. The value of the State lease is then capitalized into the price of the private land."

³² For general purposes, the term "grazing districts" can be considered to include most of the cooperative grazing arrangements established under State laws. In Montana, cooperative grazing associations are properly referred to as "cooperative State grazing districts." In North Dakota, they are called "grazing associations." In South Dakota, they are named "grazing districts." Most Wyoming organizations are named "grazing associations," although this is not true in a few cases. Land-managing soil-conservation districts cannot be distinguished by title from any other soil-conservation district (8, p. 5).

ful in blocking in efficient operating units and community grazing areas, and in adjusting land use to production capacity. But in contrast with voluntary cooperative arrangements, direct control measures provide greater security of tenure which is conducive to rehabilitation and improvement of land resources (8).

THE MONTANA LAW.—A Montana law of 1939 provided for the creation of the Montana Grass Conservation Commission and also for the organization of cooperative State grazing districts. The purpose of the law was to provide for conservation, protection, restoration, and proper utilization of grass, forage, and range resources. The grass conservation commission is a central State agency with authority to supervise and regulate cooperative State grazing districts. The commission has specific authority to: (1) Supervise all grazing districts organized under State law; (2) approve the bylaws of each district and order dissolution of any district that fails to adopt bylaws approved by the commission; (3) subpoena witnesses and issue citations to any person, directing him to appear before the commission; (4) delegate to the secretary or to any member of the commission authority to hold hearings on any matter affecting the commission; (5) require State grazing districts to submit any or all district records to the commission to aid in investigations conducted by the commission; (6) standardize the various forms used by State grazing districts and require them to submit itemized financial statements annually; and (7) to act in an advisory capacity to the State board of land commissioners and boards of county commissioners for the purpose of developing plans for use of land in or near State grazing districts (8, *p.* 8).

In Montana, State grazing districts are authorized to acquire forage-producing land by purchase, lease, or otherwise from private owners or from State, county, or Federal agencies; to control and manage range use by means of preferences, permits, and allotments; to acquire or construct fences, water facilities, and other range improvements; to specify the breed, quality, and numbers of male animals turned on common grazing areas; to fix the amount of grazing fees and assessments on range users, and to hire range riders and other employees; to purchase or market livestock, livestock products, equipment, and supplies; to undertake reseeding and other range-improvement practices; and to conduct other fiscal and management practices necessary for the general purposes of grazing-district operations. Districts are required by the Act to lease all vacant State-grant land within their respective boundaries (11).

Under the Montana law neither members nor nonmembers of the association can graze livestock in or across a Montana State grazing district without first obtaining a permit from the district. Violation of this provision is a misdemeanor, punishable by a fine of \$10 to \$500, and the trespasser is liable for damages. Trespassing livestock may be impounded, and if the owner does not post bond, pending the outcome of civil action, they may be sold to pay damages, claims, and costs (11).

Trespass provisions of the Montana law do not apply to operators within the district who graze their livestock on land owned or controlled by them as individuals. However, an operator without a district permit is automatically in trespass if he grazes any land he does not own or control, even though the district may have no lease on the land, and he cannot recover damages for any trespass committed on his land by stock grazed under district permit. To protect himself, he must either completely fence the land he controls, including fences to keep his stock off any

uncontrolled land within his range area, or obtain district grazing permits. He may obtain permits by joining the association, exchanging land he controls for any uncontrolled land within his range area, or applying for free-use permits based on the carrying capacity of the land he controls. Thus, except for fenced areas, grazing districts actually control the use of all land within district boundaries.

The Montana Department of State Lands and Investments cooperates with the State grass conservation commission in the program to rehabilitate overgrazed areas, develop watering places in dry areas, and conserve the States' grass resources. In 1948, Montana had 36 State grazing districts, involving 400,062 acres of State-owned land (10, p. 11).

COOPERATIVE MANAGEMENT UNDER THE TECHNICAL DIRECTION OF THE SOIL CONSERVATION SERVICE.—Cooperative arrangements sponsored by the Soil Conservation Service also have provided a method by which State land departments may arrange for conservation and improvement of State-owned land in some areas. In the administration of some of its title III land, the Soil Conservation Service enters into agreements with cooperative State grazing districts which enable it to develop land-management plans and regulations for large areas that embrace title III holdings but which may include large acreages of other Federal, State, county, and private land. Under these agreements, the Soil Conservation Service transfers the details of management of title III land to State grazing districts, which agree to make a diligent effort to acquire by lease, purchase, or otherwise grazing rights upon all other Federal, State, county, and privately owned lands, control of which is essential to establishment and maintenance of a sound land-use program for the district.

The Soil Conservation Service agrees: (1) To determine the rate of stocking and seasons of use and make necessary revisions to adjust range use to current forage production, and (2) to cooperate with the district in preparing the land-management plan and in conducting management work on title III land. The district agrees, among other details of management, to require permittees using title III land to follow sound conservation practices in the use and management of all other land in their operating unit, to specify the conservation practices which permittees are to follow, and to establish livestock-management rules, including among others seasons of use, kinds of livestock to be grazed, and salting plans.

The Soil Conservation Service reserves the right to perform development work at its discretion on title III land. Other development work is left to the discretion of the district, or to negotiations among district members and interested landowners. By participating in these arrangements, State land departments may lease their holdings, either to individual ranch operators for use in their commensurate-property base or to the district for use in cooperative grazing areas. The amount of development work is a matter for specific negotiation, limited perhaps by temporary concessions in rental rates which State land departments are able and willing to make, but conservation of State land is reasonably assured by participation in the area programs (8).

TAYLOR GRAZING DISTRICTS.—In some instances, State land departments arrange for the supervised use and management of small acreages of State-owned land through Taylor Grazing Districts. As a rule, most of the State holdings in these grazing districts are leased on an individual basis to members of the districts for use in their commensurate-property bases. However, Taylor Grazing Districts are authorized to lease any

vacant State holdings within their boundaries, or to manage them under cooperative agreement. By working with these district boards and district graziers and making sales of land and individual leases that are consistent with the land-use and management plans of the district, State land departments usually are able to negotiate acceptable leases or cooperative management agreements on vacant State holdings. In 1949, Taylor Grazing Districts administered 953,465 acres by agreement and 457,486 acres under Pierce Act leases (20, table 4). Statistics are not available as to the acreage of State land involved in these leases and agreements but available data indicate that some of the districts have several thousand acres of State land under lease.

OTHER ARRANGEMENTS.—In some small areas the bulk of the land leased by State grazing districts is State-owned. For example, the Potter County Grazing District in South Dakota was organized solely to lease State-owned school and endowment lands. By agreement with the State land commissioner, this district does not bid for land at annual lease auctions. It automatically receives a lease for all school land remaining unleased after individual bids have been received and all private leases taken up. The district agreed to lease all land not otherwise leased at lease day, to provide inspection service to ensure that the land is properly used, and to guarantee payment of lease rentals. In return, the State land commission agreed to lease the land at reduced rates. The loss to the State from the reduced rental rate was more than offset by the gain from a greater acreage under lease and a reduction in administrative costs. District members benefited from lower rentals and from inspections of land use (8, pp. 42, 43).

A few State land departments have jurisdiction over sufficient acreages of contiguous holdings to warrant direct supervision. For example, the State of Washington "maintains two grazing areas where the land is used by parties holding permits for the grazing of a certain number of cattle on a basis of a specified rental per head per year. Each year, prior to the issuance of grazing permits representatives of the Land Department meet with members of the Cattlemen's and Sheepmen's Association to determine rules and regulations for grazing on these areas. During the grazing year the State inspectors make periodic trips over these areas to determine if the areas are being properly used or if there are evidences of overgrazing. In the latter event, steps are taken to correct those conditions during the current season" (32, p. 4).

SUMMARY

Slightly more than a fourth of the total land area in continental United States is owned by the Federal and State Governments. In 1950, the Federal Government owned 455.6 million acres and State governments owned 80.3 million acres of rural land. The total of 535.9 million acres was 28.1 percent of the total land area (table 16).

About two-fifths of the rural land in Federal and State ownership was held for specified public uses and three-fifths was held without such use designation. Virtually all of the latter was made available to farm and ranch operators for agricultural use under leases and permits. Some of the land held for specified public uses also was used for farming and grazing under multiple-use management.

More than three-fourths of the rural land reserved by Federal and State governments for specified public uses was forest land. In 1950, the Federal Government owned 160.6 million acres in national forests and related areas under Forest Service administration, and State governments held 14.0 million acres in organized State forests. In addition, some of the land in park and recreational, wildlife, watershed-protection and other specified public land-use areas was under forestry management as a secondary use.

TABLE 16.—*Summary of statistical findings relative to Federal and State rural lands in continental United States, 1950*

Item	Unit	Federal ¹	State	Total
Land owned.....	1,000 acres	455,632	80,347	535,979
Proportion of land area.....	Percent	23.9	4.2	28.1
Purpose of ownership:				
Specific public uses:				
Forests.....	1,000 acres	160,582	14,022	174,604
Parks.....	do.....	13,956	2,385	16,341
Wildlife.....	do.....	4,129	4,761	8,890
Military.....	do.....	21,458	125	21,583
Institutional.....	do.....	242	939	1,181
Other.....	do.....	1,062	171	1,233
Total.....	do.....	201,429	22,403	223,832
No designated use.....	do.....	254,203	57,944	312,147
Total.....	do.....	455,632	80,347	535,979
Major land uses (1949):				
Farming.....	1,000 acres	4,251	2,412	6,663
Grazing.....	do.....	289,894	44,079	333,973
Total agricultural.....	do.....	294,145	46,491	340,636
Woodland not grazed.....	do.....	90,412	17,708	108,120
Special public services.....	do.....	36,399	7,855	44,254
All other land.....	do.....	34,676	8,293	42,969
Total.....		455,632	80,347	535,979
Land used for grazing (1949):				
Total authorized uses.....	1,000 acres	289,894	44,079	333,973
Proportion of all grazing land..	Percent	27.3	4.1	31.4
Grazing supplied (1949):				
Animal-unit months.....	1,000 units	36,101	6,976	43,077
Proportion of forage require- ment.....	Percent	4.5	.9	5.4

¹ Includes 57.3 million acres of Indian land, used by or for the benefit of the Indians and not public property in the ordinary sense. Indian land included 3.0 million acres of farming land, 43.7 million acres of grazing land, 7.4 million acres of woodland not grazed and 3.2 million acres of miscellaneous, idle, and waste land. Indian pasture and range land supplied about 8.9 million animal-unit months of grazing.

Compiled by the Bureau of Agricultural Economics from data supplied by the land-administering agencies.

About 16.3 million acres of Federal and State rural land have been reserved or acquired for parks. In 1950, the Federal Government had 14.0 million acres in 177 national parks, monuments, etc., and 47 of the States had nearly 3,400 developed parks on 2.3 million acres of State-owned land. In addition, several thousand wayside, park and recreational areas had been developed under cooperative arrangements as secondary uses on Federal and State land devoted to specified uses, such as forests, wildlife refuges, watershed-protection areas, and institutional sites.

Propagation and protection of fish and game were the primary use for 8.9 million acres of Federal and State rural land in 1949. This included 4.1 million acres of Federal land and 4.8 million acres of State land. In addition, the Federal government had 5.3 million acres of rural land acquired for other primary uses that were also under joint, secondary, and cooperative wildlife management as a secondary use. Wildlife reserves were maintained on State-owned land in 42 States and wildlife protection areas were maintained by 35 States on privately owned land under leases and easements. Under all these arrangements, wildlife management was either a primary or secondary use for roughly 150 million acres of Federal and State rural land.

In 1950, military and defense activities required the use of 21.5 million acres of Federal rural land and a small acreage of State rural land. These holdings included 10.5 million acres of reserved public domain and 10.9 million acres of acquired land in more than 1,500 sites, varying in size from a fraction of an acre in some radio sites to several million acres in some gunnery, bombing, and maneuver areas. The Army administered 19.3 million acres, including 2.5 million acres of civil land held primarily for flood-control purposes, and the Navy administered 2.1 million acres.

A high proportion of military land is potential farming or grazing land. More than half of the land acquired for airfields, war prisoner camps, ordnance plants, and storage sites was cropland, and more than a third of all the acquired land was pasture and range at the time of acquisition. In some instances, bottomland acquired for flood-control purposes included the best cropland and pasture in the locality. The public domain, national forest, and other land transferred to the Department of Defense also contained large acreages of grazing land.

About 2.4 million acres of Federal and State rural land were used for institutional and miscellaneous other public services. The Federal Government held 1.3 million acres for such uses as Federal prisons, veterans hospitals, agricultural experiment stations, Coast Guard stations, and work on atomic energy. State governments held 1.1 million acres for prison and correctional institutions, hospitals, colleges and universities, and various other institutional and miscellaneous uses. A total of 1.2 million acres was held by Federal and State prisons, hospitals, agricultural experiment stations, and other institutions that carry on farming operations.

Land held without specified use designations included 254.2 million acres of Federal rural land and 57.9 million acres of State rural land, or a total of 312.1 million acres. These Federal holdings included unreserved and unappropriated public domain, reclamation withdrawals, submarginal land in land utilization projects administered by the Soil Conservation Service, and surplus military land in process of disposition. Some of this Federal land is now used for public purposes, such as soil-and watershed-

protection areas, park and recreational developments, and wildlife reserves. However, the bulk of it is available for agricultural use under leases and permits. In 1949 State holdings included 3.0 million acres of tax-forfeited land and 54.9 million acres of State-grant land. About four-fifths of this State-owned land was used for farming and grazing.

In all, more than 340 million acres of Federal and State rural land were used for farming and grazing in 1949. This was 63.6 percent of the combined Federal and State holdings. Of the remainder, 44.3 million acres were used for special public services, to the exclusion of agriculture, and 108.1 million acres were woodland not grazed. The balance of 43.0 million acres consisted largely of idle and wasteland but some of it was used in trespass for grazing.

Farming was the primary use for 6.7 million acres of Federal and State rural land in 1949. This included 4.3 million acres under jurisdiction of the Federal Government and 2.4 million acres of State land. About 3.0 million acres of the farm land under Federal jurisdiction was used by or for the benefit of Indians under guardianship of the Bureau of Indian Affairs.

In 1949, 289.9 million acres of Federal rural land and 44.1 million acres of State rural land were used for grazing under leases and permits. In addition, some 15.0 million acres of Federal land and perhaps 4.0 to 5.0 million acres of State land were grazed in trespass. The total used for grazing amounted to at least a third of the acreage of all pasture and range land in the United States.

Federal and State land used for grazing under leases and permits supplied an estimated 43.1 million animal-unit months of grazing in 1949. This amounted to about 5.4 percent of the annual roughage requirement for all forage-consuming livestock. The forage supplied was sufficient to produce more than a billion pounds of beef cattle.

Available information indicates that much of the range land in Federal and State ownership now produces at less than half its original capacity. Research and experiments show that rehabilitation of many large areas of this land is economically feasible under current conditions but that feasible procedures cannot as yet be outlined for many other areas in need of brush removal, reseeding, and other costly remedial measures.

In planning for more efficient utilization and development of the farming and grazing land now in Federal and State ownership, patterns of land ownership and other institutional arrangements must be considered. Many of these land holdings do not now constitute efficient farm and ranch units or range-management areas. As a rule, the administering agencies lack authority and funds to acquire additional land by purchase or exchange for the purpose of blocking in efficient managerial units. They cannot use receipts from the land for land maintenance and capital improvements. In many areas, improvement in the land-tenure situation is a prerequisite to the establishment of sound land-utilization and development programs.

If emergency conditions should require it, the production capacity of much of the rural land in Federal and State ownership probably could be increased substantially within a few years. But where technical methods have not yet been proved and adequately appraised, improvement programs might fail or they could be too costly. Intensification of range-improvement programs and other land-development work should be based upon proved physical techniques and cost-benefit appraisals.

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APPENDIX

TABLE 17.—*Rural land holdings in Federal ownership, by primary administering agencies, continental United States by States, 1950*

State	Forest Service <i>Acres</i>	Park Service <i>Acres</i>	Soil Conservation Service <i>Acres</i>	Bureau of Land Management <i>Acres</i>	Bureau of Indian Affairs <i>Acres</i>	Fish and Wildlife Service <i>Acres</i>
Alabama.....	620,601	963	10,959	27,358	.....	134
Arizona.....	11,486,218	1,445,216	1,511	13,957,337	19,457,374	360
Arkansas.....	2,352,197	1,019	86,048	136,023	95	121,834
California.....	19,836,257	4,209,479	26,720	16,889,568	683,359	23,960
Colorado.....	13,706,291	517,820	625,551	8,409,826	730,513	852
Connecticut.....	11,723	.....	.....	.....	.....	1
Delaware.....	.....	.....	5,073	.....	.....	14,022
Florida.....	1,074,411	389,365	302,358	24,248	80,028	220,053
Georgia.....	660,917	15,579	162,058	.....	.....	371,080
Idaho.....	20,281,518	78,939	126,145	11,350,356	864,610	10,963
Illinois.....	219,567	.....	.....	.....	.....	51,487
Indiana.....	125,432	.....	.....	.....	.....	154
Iowa.....	4,749	1,000	1,910	.....	5,040	22,427
Kansas.....	.....	.....	102,737	3,023	36,423	153
Kentucky.....	469,035	50,813	14,772	.....	.....	64,544
Louisiana.....	559,828	33	31,382	7,335	.....	223,899
Maine.....	62,566	28,325	4,453	.....	.....	22,348
Maryland.....	43,050	16,605	1,800	.....	.....	13,573
Massachusetts.....	1,651	13	.....	.....	.....	9,573
Michigan.....	2,473,409	133,839	7,478	15,646	27,005	93,999
Minnesota.....	2,658,244	115	.....	93,125	863,028	204,722
Mississippi.....	1,045,661	11,972	96,184	17,577	15,488	41,275
Missouri.....	1,345,955	83	13,511	1,004	.....	39,811
Montana.....	16,531,365	1,141,162	1,952,686	6,782,536	6,502,211	489,113
Nebraska.....	206,028	2,359	137,169	28,717	74,229	138,893
Nevada.....	5,033,049	115,840	.....	47,578,098	1,142,362	254,884

TABLE 17.—*Rural land holdings in Federal ownership, by primary administering agencies, continental United States by States, 1950—Continued*

State	Bureau of Reclamation	Tennessee Valley Authority	Department of National Defense			
			Army and Air Force		Navy Department	
			Total	Civil lands	Military lands	
	Acres	Acres	Acres	Acres	Acres	Acres
Alabama.....	.....	115,865	174,925	1,716	173,209	5,162
Arizona.....	2,187,910	.....	2,204,473	.....	2,204,473	651
Arkansas.....	.....	.....	259,927	133,032	126,895	68,367
California.....	1,809,421	.....	1,396,334	43,320	1,353,014	1,064,819
Colorado.....	737,496	.....	177,493	31,382	146,111	63,380
Connecticut.....	.....	.....	500	254	246	519
Delaware.....	.....	.....	20,689	12,724	7,965	.....
Florida.....	.....	.....	611,262	11,751	629,511	63,786
Georgia.....	.....	4,920	619,805	72,388	547,417	2,893
Idaho.....	778,909	.....	916,148	2	916,146	259
Illinois.....	.....	.....	156,268	81,628	74,640	2,528
Indiana.....	.....	.....	143,949	7,400	136,549	64,729
Iowa.....	.....	.....	68,147	46,147	22,000	2,400
Kansas.....	11,245	.....	159,070	36,391	122,679	4,321
Kentucky.....	.....	22,850	363,746	99,983	263,763	393
Louisiana.....	.....	.....	227,848	33,057	194,791	5,505
Maine.....	.....	.....	11,102	.....	11,102	2,145
Maryland.....	.....	.....	101,070	3,609	100,461	23,174
Massachusetts.....	.....	.....	29,948	8,959	20,989	8,519
Michigan.....	.....	.....	40,889	1,560	39,329	1,379
Minnesota.....	.....	.....	2,675	.....	2,675	274
Mississippi.....	.....	5,000	206,121	193,910	12,214	1,137
Missouri.....	.....	.....	211,739	94,794	116,945	863
Montana.....	239,865	.....	593,099	582,018	11,081	.....

	19,854	.....	61,908	8,418	53,490	48,835
Nebraska.....	19,854	.....	3,379,929	.....	3,379,929	187,583
Nevada.....	1,274,702	.....	12,943	8,835	4,108	32
New Hampshire.....	.....	.....	58,122	5,579	52,543	20,473
New Jersey.....	.....	.....	1,314,667	11,419	1,303,248	25,830
New Mexico.....	211,686	.....	150,358	7,452	142,906	4,878
New York.....	.....	.....	151,059	13,580	137,479	107,196
North Carolina.....	.....	57,730	144,996	143,920	1,076	.....
North Dakota.....	11,059	.....	105,307	64,203	41,104	197
Ohio.....	.....	.....	438,505	327,326	111,179	45,980
Oklahoma.....	13,190	.....	144,475	28,509	115,966	2,969
Oregon.....	343,833	.....	50,652	17,822	32,830	4,615
Pennsylvania.....	.....	.....	839	.....	839	6,774
Rhode Island.....	.....	.....	109,550	9,241	100,309	18,135
South Carolina.....	29,830	.....	295,693	19,615	276,078	.....
South Dakota.....	.....	244,616	122,595	81,745	40,850	3,968
Tennessee.....	.....	.....	991,725	129,491	862,234	20,607
Texas.....	4,610	.....	2,082,307	.....	2,082,307	92,314
Utah.....	455,540	.....	13,550	1,109	12,441	.....
Vermont.....	.....	.....	215,738	43,755	171,953	105,653
Virginia.....	.....	100	142,794	7,614	135,180	32,343
Washington.....	776,335	.....	25,547	24,635	912	743
West Virginia.....	.....	.....	97,365	32,270	65,095	5
Wisconsin.....	.....	.....	491,597	.....	491,597	9,641
Wyoming.....	1,022,075	.....	.....	.....	.....	.....
United States Total.....	79,927,560	8 458,631	19,332,451	9 2,482,593	10 16,849,858	11 2,126,004

TABLE 17.—*Rural land holdings in Federal ownership, by primary administering agencies, continental United States by States, 1950—Continued*

State	Other agencies Acres	Total Acres	State	Other agencies Acres	Total Acres
Alabama.....	9,930	965,897	Nevada.....	21,213	59,007,660
Arizona.....	7,842	50,748,892	New Hampshire.....	48	683,072
Arkansas.....	23,956	3,049,466	New Jersey.....	4,117	95,802
California.....	32,924	45,992,811	New Mexico.....	107,474	34,792,564
Colorado.....	124,668	25,093,890	New York.....	21,822	354,135
Connecticut.....	911	13,691	North Carolina.....	25,229	1,930,911
Delaware.....	296	40,080	North Dakota.....	417	2,681,321
Florida.....	33,139	2,828,650	Ohio.....	10,790	251,166
Georgia.....	4,202	1,840,554	Oklahoma.....	36,512	3,769,427
Idaho.....	36,510	34,444,117	Oregon.....	12,646	32,771,572
Illinois.....	20,573	450,423	Pennsylvania.....	14,003	584,016
Indiana.....	7,161	341,425	Rhode Island.....	500	18,863
Iowa.....	1,243	106,916	South Carolina.....	52,743	952,121
Kansas.....	5,182	322,151	South Dakota.....	10,703	8,643,709
Kentucky.....	3,158	989,311	Tennessee.....	74,555	1,346,979
Louisiana.....	8,554	1,064,381	Texas.....	145,957	2,723,329
Maine.....	3,308	134,247	Utah.....	8,262	37,918,725
Maryland.....	13,704	215,976	Vermont.....	1,085	226,020
Massachusetts.....	2,330	52,034	Virginia.....	7,841	2,074,130
Michigan.....	7,729	2,801,373	Washington.....	238,585	15,381,068
Minnesota.....	6,522	3,828,705	West Virginia.....	1,766	917,108
Mississippi.....	40,053	1,480,471	Wisconsin.....	4,630	2,242,023
Missouri.....	33,364	1,646,330	Wyoming.....	4,480	32,723,177
Montana.....	74,537	34,306,634			
Nebraska.....	21,999	733,991			
			United States Total.....	121,332,633	13,455,632,173

¹ As of June 30, 1949. Includes 476,176 acres of custodial lands administered by State agencies under cooperative agreement with the Forest Service.

² As of December 1, 1949. Includes 6,867 acres of National Capital parks in the District of Columbia. Does not include Coulee Dam area with 98,500 acres in Washington. Does not include Millerton Lake Project with 11,605 acres in California or Lake Mead with 1,899,728 acres in Arizona and Nevada.

³ As of December 31, 1949. Includes 361,591 acres of custodial lands administered by State agencies under cooperative agreement with Soil Conservation Service. Also includes 75,538 acres in Wheeler-Casc irrigation projects.

⁴ As of June 30, 1949. Includes 4,248,871 acres in Arizona and Nevada under joint administration with Fish and Wildlife Service.

⁵ As of January 1, 1950. Includes 609,713 acres added under Public Law 226, August 13, 1949.

⁶ As of January 1, 1950. Does not include desert game project of 2,203,871 acres and the Charles Sheldon project of 525,000 acres in Nevada; the Cabeza Prieta project of 860,000 acres in Arizona; and the Kofa Project of 660,000 acres in Arizona, which were reported by the Bureau of Land Management. Includes Fort Peck area of 371,520 acres in Montana.

⁷ Includes Coulee Dam project of 98,500 acres in Washington State, Lake Mead with 1,899,728 acres, and Millerton Lake with 11,605 acres which are under National Park Service Administration.

⁸ As of June 30, 1949. Includes 7,550 acres of power sites and miscellaneous lands not allocated by States. Does not include approximately 577,000 acres in stream channels and impoundments.

⁹ As of June 30, 1950. Does not include flowage easements and lands in process of acquisition.

¹⁰ As of January 1, 1950. Tabulated from the Official Inventory of Military Installations. As of June 30, 1949, and from supplementary data supplied by the Corps of Army Engineers.

¹¹ As of June 30, 1950.

¹² Other agencies include the following acreages: Farmers Home Administration, 14,189; Agricultural Research Administration, 166,083; Veterans Administration, 56,406; Bureau of Mines, 1,293; Bonneville Power Commission, 7,030; Department of Commerce, 45,381; Coast Guard, 28,929; Bureau of Prisons, 20,588; Federal Security Administration, 31,925; Atomic Energy Commission, 487,519; Farm Credit Administration, 234,144; War Assets Administration, 239,146. Also includes 400 acres in District of Columbia not allocated by States.

¹³ Includes 7,267 acres in District of Columbia (400 acres under Agricultural Research Administration and 6,867 acres in National Capital parks). Also includes 7,550 acres in Tennessee Valley Authority not allocated by State.

Compiled by Bureau of Agricultural Economics from records and reports of Federal agencies.

TABLE 18.—*Federal rural land acquired or reserved for specific public uses, by States and geographic divisions, continental United States, 1950*

Division and State	Land held for specific public uses						All other land ⁷	Total federally owned
	Forests ¹	Parks ²	Wild- life reserves ³	Military ⁴	Miscel- laneous ⁵	Total ⁶		
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Northeast:								
Maine.....	63	28	22	13	3	129	5	134
New Hampshire.....	670	.....	.....	13	.....	683	.....	683
Vermont.....	210	.....	2	14	.....	226	.....	226
Massachusetts.....	2	.....	10	38	2	52	.....	52
Rhode Island.....	11	.....	.....	8	.....	19	.....	19
Connecticut.....	12	.....	.....	1	.....	14	.....	14
New York.....	15	2	53	155	12	237	117	354
New Jersey.....	.....	1	12	79	3	95	1	96
Pennsylvania.....	505	4	.....	55	3	567	17	584
Delaware.....	.....	.....	14	21	.....	35	5	40
Maryland.....	43	17	14	127	13	214	2	216
Total.....	1,531	52	127	524	37	2,271	147	2,418
Lake States:								
Michigan.....	2,473	134	94	42	6	2,749	52	2,801
Wisconsin.....	1,516	.....	165	97	3	1,781	461	2,242
Minnesota.....	2,658	.....	205	3	6	2,872	956	3,828
Total.....	6,647	134	464	142	15	7,402	1,469	8,871

Corn Belt:	134	.....	.....	106	7	247	4	251
Ohio.....	125	.....	.....	209	2	336	6	342
Indiana.....	220	.....	51	159	6	436	15	451
Illinois.....	5	.....	22	71	1	100	7	107
Iowa.....	1,346	.....	40	213	4	1,603	43	1,646
Missouri.....	1,830	1	113	758	20	2,722	75	2,797
Total.....								
Appalachian:	1,482	250	13	321	8	2,074	.....	2,074
Virginia.....	911	.....	.....	26	1	938	.....	947
West Virginia.....	1,134	252	134	258	60	1,838	93	1,931
North Carolina.....	469	51	65	364	26	975	14	989
Kentucky.....	649	240	12	127	304	1,332	15	1,347
Tennessee.....								
Total.....	4,645	793	224	1,096	399	7,157	131	7,288
Southeast:	621	1	.....	180	116	918	48	966
Alabama.....	660	16	371	623	9	1,679	162	1,841
Georgia.....	1,074	389	220	705	11	2,399	430	2,829
Florida.....	585	4	126	128	1	844	108	952
South Carolina.....								
Total.....	2,940	410	717	1,636	137	5,840	748	6,588
Mississippi Delta:	2,352	1	122	328	1	2,804	245	3,049
Arkansas.....	560	.....	224	233	7	1,024	40	1,064
Louisiana.....	1,046	.....	41	207	7	1,313	167	1,480
Mississippi.....								
Total.....	3,958	13	387	768	15	5,141	452	5,593

Footnotes at end of table.

TABLE 18.—Federal rural land acquired or reserved for specific public uses, by States and geographic divisions, continental United States, 1950—Continued

Division and State	Land held for specific public uses						All other land ⁷	Total federally owned ⁸
	Forests ¹	Parks ²	Wild-life reserves ³	Military ⁴	Miscellaneous ⁵	Total ⁶		
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Southern Plains:								
Oklahoma.....	178	1	79	484	14	756	3,013	3,769
Texas.....	658	692	75	1,012	8	2,445	278	2,723
Total.....	836	693	154	1,496	22	3,201	3,291	6,492
Northern Plains:								
North Dakota.....	.....	59	189	145	.....	393	2,288	2,681
South Dakota.....	1,115	159	50	296	6	1,626	7,018	8,644
Nebraska.....	206	2	139	111	22	480	260	740
Kansas.....	.....	.....	.....	163	2	165	157	322
Total.....	1,321	220	378	715	30	2,664	9,723	12,387
Mountain:								
Montana.....	16,531	1,141	489	593	74	18,828	15,479	34,307
Idaho.....	20,281	79	11	916	33	21,320	13,124	34,444
Wyoming.....	8,566	2,309	70	501	5	11,451	21,272	32,723

Mountain—Cont.:									
Colorado.....	13,706	518	1	241	120	14,586	10,508	25,094	
New Mexico.....	9,066	235	137	1,341	107	10,886	23,907	34,793	
Arizona.....	11,486	1,445	.....	2,205	8	15,144	35,605	50,749	
Utah.....	7,870	286	75	2,175	4	10,410	27,509	37,919	
Nevada.....	5,053	116	255	3,568	10	9,002	50,006	59,008	
Total.....	92,559	6,129	1,038	11,540	361	111,627	197,410	309,037	
Pacific:									
Washington.....	9,680	1,133	86	175	234	11,308	4,073	15,381	
Oregon.....	14,779	161	417	147	3	15,507	17,265	32,772	
California.....	19,856	4,210	24	2,461	23	26,574	19,419	45,993	
Total.....	44,315	5,504	527	2,783	260	53,389	40,757	94,146	
United States Total.....	160,582	13,956	4,129	21,458	1,304	201,429	254,203	645,632	

¹ Land under primary jurisdiction of the United States Forest Service as reported in table 17. Does not include forest and woodland on Federal holdings administered by other agencies.

² National Park Service land as reported in table 17. Includes 6,867 acres in the District of Columbia. Does not include park and recreational developments in national forests and wildlife areas, or at Federal power developments, etc.

³ Land owned and administered by the Fish and Wildlife Service, U. S. Dept. of Interior. Does not include wildlife reserves developed under leases and cooperative arrangements.

⁴ Includes Army, Air Force and Navy land and civil land administered by the Corps of Army Engineers.

⁵ Includes land administered by Tennessee Valley Authority, Agricultural Research Administration, Bureau of Mines, Bonneville Power Administration, Department of Commerce, Department of Justice, Coast Guard, Federal Security Administration, Atomic Energy Commission and Veterans Administration. Includes 7,550 acres of Tennessee Valley Authority holdings not allocated by State.

⁶ Includes 14,817 acres not allocated by States.

⁷ Includes land administered by Bureau of Land Management, Bureau of Reclamation, Farmers Home Administration, Soil Conservation Service, Bureau of Indian Affairs, and surplus military land in process of disposition by the Farm Credit Administration and the War Assets Administration.

Compiled by the Bureau of Agricultural Economics from data supplied by the administering agencies.

TABLE 19.—*Major uses of Federal rural land, by States, 1949*¹

State	Farming and grazing ²	Forest and wood- land not grazed ³	Special serv- ices ⁴	Miscel- laneous ⁵	Total Federal land ⁶
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Alabama.....	445	277	244	.....	966
Arizona.....	39,173	6,636	2,739	2,201	50,749
Arkansas.....	2,225	367	422	36	3,050
California.....	17,272	11,918	6,185	10,618	45,993
Colorado.....	15,362	7,648	779	1,305	25,094
Connecticut.....	.....	12	2	.....	14
Delaware.....	2	1	34	3	40
Florida.....	845	590	1,286	108	2,829
Georgia.....	239	573	1,014	15	1,841
Idaho.....	20,681	9,898	998	2,867	34,444
Illinois.....	84	154	141	71	450
Indiana.....	35	108	181	17	341
Iowa.....	31	1	71	4	107
Kansas.....	205	.....	72	45	322
Kentucky.....	490	1	472	26	989
Louisiana.....	501	102	417	44	1,064
Maine.....	2	55	65	12	134
Maryland.....	12	0	162	42	216
Massachusetts.....	1	2	49	.....	52
Michigan.....	49	2,159	273	320	2,801
Minnesota.....	493	2,692	204	440	3,829
Mississippi.....	1,005	251	210	14	1,480
Missouri.....	1,239	158	164	85	1,646
Montana.....	19,583	11,617	2,019	1,088	34,307
Nebraska.....	662	4	67	7	740
Nevada.....	49,260	1,205	3,798	4,745	59,008
New Hampshire.....	2	648	12	21	683
New Jersey.....	1	.....	94	1	96
New Mexico.....	28,382	2,150	1,687	2,574	34,793
New York.....	59	27	215	53	354
North Carolina.....	588	660	683	.....	1,931
North Dakota.....	2,446	23	182	30	2,681
Ohio.....	23	44	95	89	251
Oklahoma.....	3,092	142	431	104	3,769

Footnotes at end of table.

TABLE 19.—*Major uses of Federal rural land, by States, 1949*¹—Continued

State	Farming and grazing ²	Forest and wood- land not grazed ³	Special serv- ices ⁴	Miscel- laneous ⁵	Total Federal land ⁶
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Oregon.....	20,942	9,661	409	1,760	32,772
Pennsylvania.....	22	467	56	39	584
Rhode Island.....	.....	11	8	.....	19
South Carolina.....	355	351	246	.....	952
South Dakota.....	7,757	156	392	339	8,644
Tennessee.....	121	639	576	11	1,347
Texas.....	891	1	1,568	263	2,723
Utah.....	30,683	2,620	2,485	2,131	37,919
Vermont.....	3	170	16	37	226
Virginia.....	49	1,380	577	68	2,074
Washington.....	4,537	8,004	1,537	1,303	15,381
West Virginia.....	144	762	26	15	947
Wisconsin.....	251	1,528	258	205	2,242
Wyoming.....	23,902	4,534	2,751	1,536	32,723
United States....	294,146	90,407	36,387	34,692	455,632

¹ Because of rounding of figures, use-class items do not necessarily add up to total Federal land. Includes Indian land.

² Includes Federal land used under leases and permits, Indian land used by Indians or leased out and prison and hospital farms. Does not include trespass uses.

³ Excludes woodland in park, recreational, and other areas set apart for special uses and woodland used primarily for grazing. The forest area in Federal and Indian ownership is approximately 176 million acres. U. S. Forest Service, "Forests and National Prosperity," U.S.D.A. Misc. Pub. No. 668, 1948, pp. 88-89.

⁴ Parks, wildlife refuges, military and institutional land, etc., used principally for these purposes. Does not include areas used for farming, grazing, public highways, and road rights-of-way. Includes 15,000 acres not allocated by State.

⁵ Land not otherwise accounted for, including desert, rock, and land of low value for agriculture.

⁶ Includes 7,550 acres in TVA holdings not allocated by States. Also includes 7,267 acres, primarily park lands, in District of Columbia (6,867 parks and 400 Agricultural Research Administration).

Compiled by Bureau of Agricultural Economics from reports and records of Federal agencies.

TABLE 20.—*Federal rural land used for special public services, by State and geographic divisions, 1949*¹

Division and State	Parks	Wildlife refuges	Military	Miscel- laneous	Total
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Northeast:					
Maine.....	28	22	13	2	65
New Hampshire.....			12		12
Vermont.....		2	14		16
Massachusetts.....		10	38	1	49
Rhode Island.....			8		8
Connecticut.....			1	1	2
New York.....	2	53	152	8	215
New Jersey.....	1	12	79	2	94
Pennsylvania.....	3		51	2	56
Delaware.....		14	20		34
Maryland.....	17	13	126	6	162
Total.....	51	126	514	22	713
Lake States:					
Michigan.....	134	94	40	5	273
Wisconsin.....		162	94	2	258
Minnesota.....		198	2	4	204
Total.....	134	454	136	11	735
Corn Belt:					
Ohio.....			91	4	95
Indiana.....			180	1	181
Illinois.....		43	94	4	141
Iowa.....	1	21	49		71
Missouri.....		36	125	3	164
Total.....	1	100	539	12	652
Appalachian:					
Virginia.....	245	9	319	4	577
West Virginia.....			25	1	26
North Carolina.....	252	133	254	44	683
Kentucky.....	51	60	342	19	472
Tennessee.....	237	11	101	227	576
Total.....	785	213	1,041	295	2,334
Southeast:					
Alabama.....	1		157	86	244
Georgia.....	16	370	622	6	1,014
Florida.....	389	205	686	6	1,286
South Carolina.....	4	124	117	1	246
Total.....	410	699	1,582	99	2,790
Mississippi Delta:					
Arkansas.....	1	120	300	1	422
Louisiana.....		200	213	4	417
Mississippi.....	11	38	156	5	210
Total.....	12	358	669	10	1,049

Footnotes at end of table.

TABLE 20.—*Federal rural land used for special public services, by States and geographic divisions, 1949*¹—Continued

Division and State	Parks	Wildlife refuges	Military	Miscel- laneous	Total
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Southern Plains:					
Oklahoma.....	1	23	406	1	431
Texas.....	642	17	904	5	1,568
Total.....	643	40	1,310	6	1,999
Northern Plains:					
North Dakota.....	59	123	.....	.....	182
South Dakota.....	81	39	267	5	392
Nebraska.....	2	27	38	.....	67
Kansas.....	.....	.....	71	1	72
Total.....	142	189	376	6	713
Mountain:					
Montana.....	1,140	306	572	1	2,019
Idaho.....	79	2	916	1	998
Wyoming.....	2,220	51	477	3	2,751
Colorado.....	463	1	219	96	779
New Mexico.....	188	74	1,339	86	1,687
Arizona.....	545	.....	2,188	6	2,739
Utah.....	245	75	2,162	3	2,485
Nevada.....	44	198	3,548	8	3,798
Total.....	4,924	707	11,421	204	17,256
Pacific:					
Washington.....	1,126	65	159	187	1,537
Oregon.....	127	142	138	2	409
California.....	4,169	20	1,978	18	6,185
Total.....	5,422	227	2,275	207	8,131
United States Total	² 12,531	3,113	19,863	³ 880	⁴ 36,387

¹ Does not include areas used for farming and grazing and public highways and road rights-of-way. Includes an undetermined acreage of forest and woodland, some of which has commercial value.

² Includes 6,867 acres of National Capital parks in the District of Columbia.

³ Includes 7,550 acres in Tennessee Valley Authority not allocated by States.

⁴ Includes 15,000 acres not allocated by State. See above footnotes.

Compiled by the Bureau of Agricultural Economics from data supplied by the administering agencies.

TABLE 21.—*Federal land used for farming and grazing by States and geographic divisions, 1949*¹

Division and State	Area farmed ²	Area grazed ³	Total
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Northeast:			
Maine.....	447	1,249	1,696
New Hampshire.....	1,324	331	1,655
Vermont.....	535	2,210	2,745
Massachusetts.....	396	793	1,189
Rhode Island.....	46	100	146
Connecticut.....	102	182	284
New York.....	4,055	55,292	59,347
New Jersey.....	459	845	1,304
Pennsylvania.....	13,145	8,564	21,709
Delaware.....	1,748	229	1,977
Maryland.....	3,429	8,396	11,825
Total.....	25,686	78,191	103,877
Lake States:			
Michigan.....	4,811	44,635	49,446
Wisconsin.....	23,221	227,579	250,800
Minnesota.....	49,585	443,261	492,846
Total.....	77,617	715,475	793,092
Corn Belt:			
Ohio.....	17,985	5,359	23,344
Indiana.....	29,218	6,103	35,321
Illinois.....	58,376	25,900	84,276
Iowa.....	19,066	11,725	30,791
Missouri.....	39,605	1,199,291	1,238,896
Total.....	164,250	1,248,378	1,412,628
Appalachian:			
Virginia.....	1,524	47,518	49,042
West Virginia.....	1,880	142,426	144,306
North Carolina.....	42,590	545,039	587,629
Kentucky.....	21,433	468,604	490,037
Tennessee.....	61,047	59,739	120,786
Total.....	128,474	1,263,326	1,391,800
Southeast:			
Alabama.....	43,579	400,928	444,507
Georgia.....	5,455	233,434	238,889
Florida.....	24,110	821,370	845,480
South Carolina.....	53,202	301,382	354,584
Total.....	126,346	1,757,114	1,883,460
Mississippi Delta:			
Arkansas.....	34,147	2,191,086	2,225,233
Louisiana.....	2,179	498,823	501,002
Mississippi.....	54,872	950,074	1,004,946
Total.....	91,198	3,639,983	3,731,181

Footnotes at end of table.

TABLE 21.—*Federal land used for farming and grazing by States and geographic divisions, 1949*¹—Continued

Division and State	Area farmed ²	Area grazed ³	Total
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Southern Plains:			
Oklahoma.....	866,334	2,225,787	3,092,121
Texas.....	68,393	822,242	890,635
Total.....	934,727	3,048,029	3,982,756
Northern Plains:			
North Dakota.....	238,153	2,208,161	2,446,314
South Dakota.....	622,574	7,134,744	7,757,318
Nebraska.....	80,321	581,760	662,081
Kansas.....	48,664	156,060	204,724
Total.....	989,712	10,080,725	11,070,437
Mountain:			
Montana.....	585,835	18,996,928	19,582,763
Idaho.....	146,580	20,534,453	20,681,033
Wyoming.....	102,205	23,799,335	23,901,540
Colorado.....	34,224	15,327,484	15,361,708
New Mexico.....	69,904	28,312,122	28,382,026
Arizona.....	209,328	38,964,034	39,173,362
Utah.....	93,699	30,589,567	30,683,266
Nevada.....	38,520	49,221,262	49,259,782
Total.....	1,280,295	225,745,185	227,025,480
Pacific:			
Washington.....	87,423	4,449,826	4,537,249
Oregon.....	86,678	20,855,703	20,942,381
California.....	259,633	17,012,236	17,271,869
Total.....	433,734	42,317,765	42,751,499
United States.....	4,252,039	289,894,171	294,146,210

¹ Includes Federal land used under leases and permits, Indian land used by Indians or leased out, and prison and hospital farms.

² Includes 3 million acres of Indian land.

³ Includes 43.7 million acres of Indian land. Does not include about 15 million acres grazed in trespass.

Compiled by the Bureau of Agricultural Economics from data supplied by the administering agencies.

TABLE 22.—*Federally owned land used for grazing; acres grazed, animal-units grazed, and animal-unit months of grazing, by States and geographic divisions, 1949*

Division and State	Area grazed ¹	Livestock grazed ²	Animal units grazed ²	Animal- unit months of grazing ³
	<i>1,000 acres</i>	<i>1,000 head</i>	<i>1,000 units</i>	<i>1,000 units</i>
Northeast:				
Maine.....	1			1
New Hampshire.....				
Vermont.....	2	1	1	1
Massachusetts.....	1			1
Rhode Island.....				
Connecticut.....				
New York.....	55	7	4	20
New Jersey.....	1			1
Pennsylvania.....	9	2	2	9
Delaware.....				
Maryland.....	9	3	2	10
Total.....	78	13	9	43
Lake States:				
Michigan.....	45	3	3	7
Wisconsin.....	228	2	2	7
Minnesota.....	443	9	6	32
Total.....	716	14	11	46
Corn Belt:				
Ohio.....	5	1	1	6
Indiana.....	6	1	1	4
Illinois.....	26	8	5	23
Iowa.....	12	1	1	4
Missouri.....	1,199	8	8	70
Total.....	1,248	19	16	107
Appalachian:				
Virginia.....	47	4	3	16
West Virginia.....	142	3	2	12
North Carolina.....	545	4	4	23
Kentucky.....	469	3	3	13
Tennessee.....	60	13	13	72
Total.....	1,263	27	25	136
Southeast:				
Alabama.....	401	11	11	65
Georgia.....	234	2	1	12
Florida.....	821	11	11	103
South Carolina.....	301	4	4	30
Total.....	1,757	28	27	210

Footnotes at end of table.

TABLE 22.—*Federally owned land used for grazing; acres grazed, animal units grazed and animal-unit months of grazing, by States and geographic divisions, 1949—Continued*

Division and State	Area grazed ¹	Livestock grazed ²	Animal units grazed ²	Animal- unit months of grazing ³
	<i>1,000 acres</i>	<i>1,000 head</i>	<i>1,000 units</i>	<i>1,000 units</i>
Mississippi Delta:				
Arkansas.....	2,191	7	7	283
Louisiana.....	499	7	7	46
Mississippi.....	950	7	7	54
Total.....	3,640	21	21	383
Southern Plains:				
Oklahoma.....	2,226	161	133	795
Texas.....	822	30	14	141
Total.....	3,048	191	147	936
Northern Plains:				
North Dakota.....	2,208	120	106	628
South Dakota.....	7,135	431	308	1,798
Nebraska.....	582	34	30	171
Kansas.....	156	4	4	40
Total.....	10,081	589	448	2,637
Mountain:				
Montana.....	18,997	2,354	1,143	3,727
Idaho.....	20,535	2,051	731	2,580
Wyoming.....	23,799	2,393	811	3,527
Colorado.....	15,327	1,891	706	2,322
New Mexico.....	28,312	1,778	699	4,299
Arizona.....	38,964	1,297	645	4,343
Utah.....	30,590	2,484	790	3,888
Nevada.....	49,221	1,229	591	2,824
Total.....	225,745	15,477	6,116	27,510
Pacific:				
Washington.....	4,450	227	103	514
Oregon.....	20,856	774	464	1,779
California.....	17,012	814	458	1,800
Total.....	42,318	1,815	1,025	4,093
United States Total.	289,894	18,194	7,845	36,101

¹ Data does not include about 15 million acres grazed in trespass.

² Under leases and permits. In the national forests animals under 6 months of age were not counted and animals grazed under free-use permits were not included.

³ Authorized grazing, including that under free-use permits. Does not include trespass grazing, which amounted to possibly 2.0 million animal-unit months.

Compiled by Bureau of Agricultural Economics from data supplied by the administering agencies.

TABLE 23.—*State-owned rural land: Purposes of ownership by geographic divisions, 1919*¹

State	Land held for specific public uses						Land with- out use designation ⁷	Total State- owned
	Forests ²	Parks ³	Wildlife reserves ⁴	Institu- tional sites ⁵	Miscel- laneous other uses ⁶	Total		
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Alabama.....	110,692	31,465	13,881	102,061	1,609	259,708	61,196	320,904
Arizona.....		15,245	22,940	3,265		41,450	9,899,028	9,940,478
Arkansas.....	64	16,779	21,155	2,043		43,011	350,000	393,041
California.....	71,325	543,899	166,543	22,649	8,280	812,696	2,119,233	2,931,929
Colorado.....			31,618	15,500		47,118	3,133,671	3,180,819
Connecticut.....	120,160	16,033	5,347	12,670	4,350	158,560		158,560
Delaware.....	4,192	2	4,380	903		9,477		9,477
Florida.....	25,903	46,961	71,420	46,010	136,552	326,846	747,510	1,074,356
Georgia.....	39,077	33,922		16,649		89,648		89,648
Idaho.....	50,000	8,249	22,320	13,421		93,990	2,867,500	2,961,490
Illinois.....	10,193	29,394	30,871	30,101		100,559		100,559
Indiana.....	96,249	43,851	19,140	38,812		198,052		198,052
Iowa.....	14,582	23,910	17,252	15,549		71,293	477	71,770
Kansas.....	5,600	32,285	6,300	15,820	581	60,586		60,586
Kentucky.....	3,624	11,411	3,048	27,981		46,064		46,064
Louisiana.....	8,045	11,521	250,000	14,626	13	284,205		284,205
Maine.....	21,643	159,353		1,750		182,746		182,746
Maryland.....	78,190	4,602	23,055	3,271		109,118	123	109,241
Massachusetts.....	171,483	18,364	2,322	6,867		202,000		202,000
Michigan.....	3,610,126	144,467	571,219	47,345	2,964	4,403,157		4,403,157
Minnesota.....	2,902,425	83,346	1,312,778	39,891		3,438,440	2,068,392	5,506,832
Mississippi.....	23,626	10,560	66,294	54,051	80	154,611		154,611
Missouri.....	118,170	58,139	56,488	29,664	146	262,607	11,759	274,366
Montana.....	473,109	2,963	203,024	21,715		700,811	4,796,704	5,497,515
Nebraska.....		9,065		10,798		19,863	1,638,866	1,658,729
Nevada.....		11,488	5,897	3,395		20,780	37,261	58,041
New Hampshire.....	8,490	45,481	1,184	2,965		58,120		58,120

TABLE 23.—State-owned rural land: Purposes of ownership by geographic divisions, 1949¹—Continued

State	Land held for specific public uses					Land with- out use designation ⁷	Total State- owned
	Forests ²	Parks ³	Wildlife reserves ⁴	Institu- tional sites ⁵	Miscel- laneous other uses ⁶	Total	
	Acres	Acres	Acres	Acres	Acres	Acres	Acres
New Jersey.....	87,337	18,382	54,738	11,681	.....	172,138	172,138
New Mexico.....	.....	3,201	77,145	68,124	.....	148,470	11,503,470
New York.....	2,896,428	166,901	28,148	15,468	.....	3,106,945	3,106,945
North Carolina.....	114,866	34,142	139,609	44,648	.....	333,265	333,265
North Dakota.....	.....	3,536	.....	9,213	.....	12,749	1,819,834
Ohio.....	130,904	56,161	27,575	25,447	.....	240,087	240,087
Oklahoma.....	.....	46,938	146,203	46,824	.....	239,965	1,170,248
Oregon.....	664,944	63,900	26,982	18,524	.....	774,350	1,608,931
Pennsylvania.....	1,730,520	195,649	881,555	15,886	1,332	2,824,942	2,824,942
Rhode Island.....	532	6,877	114	1,976	89	9,588	9,588
South Carolina.....	129,216	44,803	6,427	13,900	.....	194,346	1,011,177
South Dakota.....	17,067	70,338	1,174	2,172	.....	90,751	2,524,977
Tennessee.....	114,222	69,938	94,940	70,291	.....	349,391	349,391
Texas.....	6,696	57,569	70,327	16,204	458	151,254	3,128,614
Utah.....	.....	85	65,354	7,123	.....	72,562	3,027,016
Vermont.....	72,498	6,368	.....	2,209	.....	81,075	81,075
Virginia.....	1,801	25,224	13,346	45,422	3,537	89,330	89,330
Washington.....	620,243	56,452	94,597	13,082	221	784,595	2,942,044
West Virginia.....	64,288	28,175	26,796	18,456	9,937	147,652	147,652

Footnotes at end of table.

TABLE 23.—*State-owned rural land: Purposes of ownership by geographic divisions, 1949*¹—Concluded

State	Land held for specific public uses						Land with- out use designation ⁷	Total State- owned
	Forests ²	Parks ³	Wildlife reserves ⁴	Institu- tional sites ⁵	Miscel- laneous other uses ⁶	Total		
Wisconsin.....	<i>Acres</i> 273,158	<i>Acres</i> 15,847	<i>Acres</i> 67,820	<i>Acres</i> 13,404	<i>Acres</i> 1,049	<i>Acres</i> 371,278	<i>Acres</i> 159,921	<i>Acres</i> 531,199
Wyoming.....	.....	1,356	6,514	5,141	.....	13,011	3,633,788	3,646,799
United States.....	14,021,688	2,384,597	4,760,870	1,064,967	171,198	22,403,320	57,943,952	80,347,272

¹ Does not include highway and road rights-of-way.² Land in organized forests. Does not include forest and woodland in parks, wildlife reserves, and other special-use areas, or land not specifically transferred to forestry management from land-grant and tax-forfeited holdings.³ Does not include State park and recreational developments on leased land.⁴ Does not include cooperative reserves on Federal land and State reserves on leased privately owned land.⁵ These data are incomplete for some States.⁶ Includes National Guard camps and rifle ranges, fair grounds, airports, radio stations, flood-control areas, and watershed-protection areas.⁷ Consists largely of State grant and tax-forfeited land. About 43.9 million acres of this land are used for agricultural purposes.

Compiled by Bureau of Agricultural Economics from data supplied by the administering agencies.

TABLE 24.—*Major uses of State-owned rural land, by States and geographic divisions, 1949*

Division and State	Farming and grazing ¹	Forest land not grazed ²	Special public services ³	All other land ⁴	Total State- owned land
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Northeast:					
Maine.....		22	161		183
New Hampshire.....		9	49		58
Vermont.....	2	73	6		81
Massachusetts.....	3	171	28		202
Rhode Island.....	1	1	8		10
Connecticut.....	1	122	36		159
New York.....	6	2,897	204		3,107
New Jersey.....	6	91	75		172
Pennsylvania.....	6	1,730	1,089		2,825
Delaware.....	1	4	5		10
Maryland.....	2	78	29		109
Total.....	28	5,198	1,690		6,916
Lake States:					
Michigan.....	6	3,640	757		4,403
Wisconsin.....	12	423	86	10	531
Minnesota.....	11	2,597	1,435	1,464	5,507
Total.....	29	6,660	2,278	1,474	10,441
Corn Belt:					
Ohio.....	17	130	93		240
Indiana.....	25	109	64		198
Illinois.....	26	10	64		100
Iowa.....	11	15	46		72
Missouri.....	22	127	122	3	274
Total.....	101	391	389	3	884
Appalachian:					
Virginia.....	8	2	79		89
West Virginia.....	8	64	75		147
North Carolina.....	11	115	207		333
Kentucky.....	10	9	27		46
Tennessee.....	6	114	229		349
Total.....	43	304	617		964
Southeast:					
Alabama.....	1	169	148	3	321
Georgia.....	7	39	44		90
Florida.....	60	584	241	189	1,074
South Carolina.....	6	133	57	815	1,011
Total.....	74	925	490	1,007	2,496

Footnotes at end of table.

TABLE 24.—*Major uses of State-owned rural land, by States and geographic divisions, 1949—Continued*

Division and State	Farming and grazing ¹	Forest land not grazed ²	Special public services ³	All other land ⁴	Total State- owned land
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Mississippi Delta:					
Arkansas.....		350	43		393
Louisiana.....		8	276		284
Mississippi.....	9	44	102		155
Total.....	9	402	421		832
Southern Plains:					
Oklahoma.....	838		219	113	1,170
Texas.....	2,760	18	129	373	3,280
Total.....	3,598	18	348	486	4,450
Northern Plains:					
North Dakota.....	1,814		6		1,820
South Dakota.....	2,402	17	72	34	2,525
Nebraska.....	1,637		16	6	1,659
Kansas.....	8	6	47		61
Total.....	5,861	23	141	40	6,065
Mountain:					
Montana.....	4,798	493	207		5,498
Idaho.....	2,147	757	33	24	2,961
Wyoming.....	3,270	6	7	364	3,647
Colorado.....	3,044	93	44		3,181
New Mexico.....	11,341	3	81	78	11,503
Arizona.....	8,734	750	39	418	9,941
Utah.....	1,928	226	66	807	3,027
Nevada.....	37		19	2	58
Total.....	35,299	2,328	496	1,693	39,816
Pacific:					
Washington.....	780	620	159	1,383	2,942
Oregon.....	505	745	96	263	1,609
California.....	164	94	730	1,944	2,932
Total.....	1,449	1,459	985	3,590	7,483
U. S. Total.....	46,491	17,708	7,855	8,293	80,347

¹ Includes land leased out for farming and grazing and land used by the State in institutional farms, experiment stations, etc.

² Does not include forest and woodland used primarily for grazing or for special purposes such as parks, fish and game refuges, and institutional sites.

³ Does not include land used primarily for agricultural production. Includes an undetermined acreage of forest and woodland, some of which has commercial value.

⁴ Consists largely of idle and wasteland, including State grant and tax-forfeited land not under lease and with no reported use. Some of this land may have been used in trespass for grazing.

Compiled by Bureau of Agricultural Economics from data supplied by administering agencies.

TABLE 25.—*State-owned rural land used for public services, by States and geographic divisions, 1949*¹

Division and State	Parks ²	Fish and game reserves ³	Institutional sites ⁴	Miscellaneous other uses ⁵	Total
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Northeast:					
Maine.....	159	.....	2	.....	161
New Hampshire....	46	1	3	.....	50
Vermont.....	6	.....	.....	.....	6
Massachusetts.....	18	2	4	3	27
Rhode Island.....	7	.....	1	.....	8
Connecticut.....	16	5	10	4	35
New York.....	167	28	9	.....	204
New Jersey.....	18	55	2	.....	75
Pennsylvania.....	196	882	10	1	1,089
Delaware.....	.....	4	.....	.....	4
Maryland.....	5	23	2	.....	30
Total.....	638	1,000	43	8	1,689
Lake States:					
Michigan.....	145	571	41	.....	757
Wisconsin.....	16	68	3	.....	87
Minnesota.....	83	1,313	39	.....	1,435
Total.....	244	1,952	83	.....	2,279
Corn Belt:					
Ohio.....	56	28	9	.....	93
Indiana.....	44	19	1	.....	64
Illinois.....	28	31	5	.....	64
Iowa.....	24	17	5	.....	46
Missouri.....	58	51	13	.....	122
Total.....	210	146	33	.....	389
Appalachian:					
Virginia.....	25	13	37	4	79
West Virginia.....	28	27	10	10	75
North Carolina.....	34	140	33	.....	207
Kentucky.....	11	3	13	.....	27
Tennessee.....	70	95	64	.....	229
Total.....	168	278	157	14	617
Southeast:					
Alabama.....	32	14	101	2	149
Georgia.....	34	.....	10	.....	44
Florida.....	47	72	46	76	241
South Carolina.....	45	7	6	.....	58
Total.....	158	93	163	78	492

Footnotes at end of table.

TABLE 25.—*State-owned rural land used for public services, by States and geographic divisions, 1949*¹—Continued

Division and State	Parks ²	Fish and game reserves ³	Institutional sites ⁴	Miscellaneous other uses ⁵	Total
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Mississippi Delta:					
Arkansas.....	17	24	2	.....	43
Louisiana.....	12	250	14	.....	276
Mississippi.....	11	66	25	.....	102
Total.....	40	340	41	.....	421
Southern Plains:					
Oklahoma.....	47	146	25	.....	218
Texas.....	42	70	16	1	129
Total.....	89	216	41	1	347
Northern Plains:					
North Dakota.....	4	.....	2	.....	6
South Dakota.....	70	1	1	.....	72
Nebraska.....	9	.....	7	.....	16
Kansas.....	32	6	9	.....	47
Total.....	115	7	19	.....	141
Mountain:					
Montana.....	3	203	1	.....	207
Idaho.....	8	22	3	.....	33
Wyoming.....	1	.....	5	.....	6
Colorado.....	.....	32	12	.....	44
New Mexico.....	3	77	1	.....	81
Arizona.....	15	23	.....	.....	38
Utah.....	.....	65	.....	.....	65
Nevada.....	12	6	2	.....	20
Total.....	42	428	24	.....	494
Pacific:					
Washington.....	56	93	10	.....	159
Oregon.....	64	27	5	.....	96
California.....	544	167	14	6	731
Total.....	664	287	29	6	986
U. S. Total.....	2,368	4,747	633	107	7,855

¹ Does not include land used primarily for farming and grazing. Includes an undetermined acreage of forest and woodland, some of which has commercial value.

² Does not include State park and recreational developments on leased land.

³ Does not include cooperative reserves on Federal land and State reserves on leased privately owned land.

⁴ These data are incomplete for some States.

⁵ Includes National Guard camps and rifle ranges, fair grounds, airports, radio stations, flood-control areas and watershed-protection areas. Because of rounding of figures agency totals do not always add to State totals.

TABLE 26.—*State-owned land used for farming and grazing, by States and geographic divisions, 1949*¹

Division and State	Farming	Grazing	Total
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Northeast:			
Maine.....			
New Hampshire.....	162	165	327
Vermont.....	1,159	1,050	2,209
Massachusetts.....	1,720	979	2,699
Rhode Island.....	715	90	805
Connecticut.....	908	455	1,363
New York.....	4,113	2,054	6,167
New Jersey.....	4,988	1,134	6,122
Pennsylvania.....	4,517	1,377	5,894
Delaware.....	416	133	549
Maryland.....	1,282	341	1,623
Total.....	19,980	7,778	27,758
Lake States:			
Michigan.....	5,120	903	6,023
Wisconsin.....	10,362	1,175	11,537
Minnesota.....	10,390	350	10,740
Total.....	25,872	2,428	28,300
Corn Belt:			
Ohio.....	12,175	4,412	16,587
Indiana.....	13,521	11,535	25,056
Illinois.....	13,425	12,451	25,876
Iowa.....	7,407	3,222	10,629
Missouri.....	20,131	2,275	22,406
Total.....	66,659	33,895	100,554
Appalachian:			
Virginia.....	6,533	2,131	8,664
West Virginia.....	2,740	5,653	8,393
North Carolina.....	9,361	1,903	11,264
Kentucky.....	3,319	6,600	9,919
Tennessee.....	5,754		5,754
Total.....	27,707	16,287	43,994
Southeast:			
Alabama.....	1,140		1,140
Georgia.....	5,422	1,500	6,922
Florida.....	320	60,000	60,320
South Carolina.....	3,587	1,884	5,471
Total.....	10,469	63,384	73,853
Mississippi Delta:			
Arkansas.....			
Louisiana.....	74	105	179
Mississippi.....	4,000	5,000	9,000
Total.....	4,074	5,105	9,179

Footnotes at end of table.

TABLE 26.—*State-owned land used for farming and grazing, by States and geographic divisions, 1949*¹—Continued

Division and State	Farming	Grazing	Total
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Southern Plains:			
Oklahoma.....	573,063	265,378	838,441
Texas.....		2,760,365	2,760,365
Total.....	573,063	3,025,743	3,598,806
Northern Plains:			
North Dakota.....	184,174	1,630,115	1,814,289
South Dakota.....	12,406	2,389,858	2,402,264
Nebraska.....	1,885	1,635,061	1,636,946
Kansas.....	4,673	2,874	7,547
Total.....	203,138	5,657,908	5,861,046
Mountain:			
Montana.....	678,162	4,119,229	4,797,391
Idaho.....	110,662	2,036,216	2,146,878
Wyoming.....	20,000	3,250,000	3,270,000
Colorado.....	139,409	2,905,131	3,044,540
New Mexico.....	76,250	11,265,403	11,341,653
Arizona.....	284,469	8,449,228	8,733,697
Utah.....	46,125	1,882,235	1,928,360
Nevada.....	336	36,090	36,426
Total.....	1,355,413	33,943,532	35,298,945
Pacific:			
Washington.....	112,812	666,856	779,668
Oregon.....	2,942	501,508	504,450
California.....	10,025	154,371	164,396
Total.....	125,779	1,322,735	1,448,514
United States.....	2,412,154	44,078,795	46,490,949

¹ Includes land leased out for farming and grazing and land used for institutional farms, experiment stations, wildlife-feeding areas, etc.

TABLE 27.—*Grazing supplied by State-owned range, by States and geographic divisions, 1949*

Division and State	Acres grazed ¹	Animal-unit months of grazing ²
	<i>Acres</i>	<i>Units</i>
Northeast:		
Maine.....		
New Hampshire.....	165	8
Vermont.....	1,050	457
Massachusetts.....	979	979
Rhode Island.....	90	180
Connecticut.....	455	455
New York.....	2,054	734
New Jersey.....	1,134	1,134
Pennsylvania.....	1,377	1,530
Delaware.....	133	95
Maryland.....	341	379
Total.....	7,778	5,951
Lake States:		
Michigan.....	903	226
Wisconsin.....	1,175	43
Minnesota.....	350	27
Total.....	2,428	296
Corn Belt:		
Ohio.....	4,412	4,412
Indiana.....	11,535	8,873
Illinois.....	12,451	10,376
Iowa.....	3,222	1,074
Missouri.....	2,275	102
Total.....	33,895	24,837
Appalachian:		
Virginia.....	2,131	710
West Virginia.....	5,653	377
North Carolina.....	1,903	80
Kentucky.....	6,600	180
Tennessee.....		
Total.....	16,287	1,347
Southeast:		
Alabama.....		
Georgia.....	1,500	57
Florida.....	60,000	6,452
South Carolina.....	1,884	165
Total.....	63,384	6,674
Mississippi Delta:		
Arkansas.....		
Louisiana.....	105	11
Mississippi.....	5,000	255
Total.....	5,105	266

Footnotes at end of table.

TABLE 27.—*Grazing supplied by State-owned range, by States and geographic divisions, 1949—Continued*

Division and State	Acres grazed ¹	Animal-unit months of grazing ²
	<i>Acres</i>	<i>Acres</i>
Southern Plains:		
Oklahoma.....	265,378	115,206
Texas.....	2,760,365	467,858
Total.....	3,025,743	583,064
Northern Plains:		
North Dakota.....	1,630,115	465,747
South Dakota.....	2,389,858	597,464
Nebraska.....	1,635,061	441,908
Kansas.....	2,874	737
Total.....	5,657,908	1,505,856
Mountain:		
Montana.....	4,119,229	735,577
Idaho.....	2,036,216	248,319
Wyoming.....	3,250,000	524,194
Colorado.....	2,905,131	453,927
New Mexico.....	11,265,403	1,609,343
Arizona.....	8,449,228	880,128
Utah.....	1,882,235	261,422
Nevada.....	36,090	2,136
Total.....	33,943,532	4,715,046
Pacific:		
Washington.....	666,856	74,928
Oregon.....	501,508	41,107
California.....	154,371	16,250
Total.....	1,322,735	132,285
United States Total.....	44,078,795	6,975,622

¹ Includes land on which grazing is authorized by permits or leases and land used for grazing by State institutions. Does not include unauthorized or trespass grazing.

² Estimated. The estimates were made for States and areas on the basis of available statistics on grazing uses of comparable federally owned range and generalized information with respect to the vegetative cover and grazing capacity of the various range areas. No allowance is made in these estimates for trespass grazing.

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